

ARISTOTLE'S *DE ANIMA* IN FOCUS

Edited by
Michael Durrant

ROUTLEDGE LIBRARY EDITIONS:
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Volume 4

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Edited by
MICHAEL DURRANT

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ARISTOTLE'S
DE ANIMA
in focus

Michael Durrant



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CONTENTS

<i>Preface</i>	vii
<i>Acknowledgements</i>	ix
<i>Abbreviations</i>	xi
<i>Notes on translation and amendments to translation</i>	xii
INTRODUCTION	1
<i>Michael Durrant</i>	
TRANSLATION OF <i>DE ANIMA</i> TEXT	15
I ARISTOTLE ON SENSE-PERCEPTION	75
<i>Thomas J. Slakey</i>	
II A NEW LOOK AT ARISTOTLE'S THEORY OF PERCEPTION	90
<i>Terrell Ward Bynum</i>	
III ARISTOTLE ON KINDS OF THINKING	110
<i>Malcolm F. Lowe</i>	
IV TRACKING ARISTOTLE'S NOÛS	128
<i>Michael V. Wedin</i>	
V BODY AND SOUL IN ARISTOTLE	162
<i>Richard Sorabji</i>	
VI ARISTOTLE'S DEFINITION OF SOUL	197
<i>William Charlton</i>	
<i>Index</i>	217

PREFACE

As will become clear in the articles in this volume, Aristotle's *De Anima* is not solely a work of interest to those who study the problems of ancient philosophy, but has a valuable contribution to make to contemporary philosophy and indeed, in one aspect at least, to contemporary science.

It has often been observed that the major part of this work is given over to perception. In putting together this collection of essays however I have not adopted the principle that the number of essays to be included should reflect the space devoted to a given topic in the original text. Rather, I have adopted the principle that the essays should reflect at least three main interests Aristotle has in the *De Anima*, namely: (1) perception and the philosophy of perception; (2) thinking and the intellect; (3) the nature of the soul and the relation between body and soul. Thus the papers by Slakey and Bynum concern Aristotle on perception, though with different emphases. In Slakey's classic paper, we have a detailed argument for a particular interpretation of Aristotle's theory of sense-perception; in Bynum, Aristotle's theory is set in both a wider and more pervasive context. The papers by Lowe and Wedin concern Aristotle on thinking and the intellect, though again with difference of emphasis. Lowe hammers out a quite detailed thesis attempting to explain how Aristotle marks out a difference between thinking and sensation – indeed between different kinds of thinking and sensation – as against the view that Aristotle follows his predecessors in assimilating thinking and sensation. Wedin argues for a more general thesis, namely for a finitistic interpretation of Aristotle's account of *noûs* in the programme set forth in III, 4 and 5; thus, in my view, solving an

PREFACE

age-old problem as to how what Aristotle says about the productive mind (intellect) in III, 430a 17–23 is compatible with his general finitistic functional account of psychological activities. The papers by Sorabji and Charlton concern Aristotle on body and soul, and on soul: once again there is a contrast of emphasis. Sorabji's classic paper is concerned to argue for the more general thesis that Aristotle's account of the relation between body and soul cannot be neatly slotted into *any* of the wide range of interpretations offered by commentators but is rather *sui generis*, and to draw out the value of the account for modern philosophical problems. Charlton is chiefly concerned with a more detailed matter: namely, Aristotle's question at I, 402a 25–6: 'Is a soul a thing which exists in *dunamis* or rather a kind of *entelecheia*?' And seeks to expand the sense in which the soul is the actuality (*entelecheia*) of an organic body; an exposition which is both penetrating and original.

In the interest of continued scholarship and discussion I have invited contributors to append a note of later publications in which the main theses advocated here are developed. At the time of preparation of this volume a new collection of essays on the *De Anima* edited by M. C. Nussbaum and A. O. Rorty had not been published. The present volume seeks to collect together some valuable contributions from the recent past and it is hoped that, as well as being a contribution in its own right, this collection will also provide a useful background for and complement to the Nussbaum and Rorty collection.

There are a number of other papers from the recent past which would be worthy of inclusion in any collection on the *De Anima* but space has demanded that I be selective.

A translation of *De Anima* Books II and III is given here with certain pertinent passages from Book I. There is a case for saying that the whole of Book I should be included, but this has not been possible within the word limit prescribed for the In Focus series. On the other hand it may be countered that Book I is mainly of secondary interest, being principally Aristotle's criticisms of the views of his predecessors.

Michael Durrant
University of Wales, College of Cardiff,
Cardiff

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ABBREVIATIONS

<i>A. Pr.</i>	<i>Analytica Priora (Prior Analytics)</i>
<i>A. Pst.</i>	<i>Analytica Posteriora (Posterior Analytics)</i>
<i>Cael.</i>	<i>De Caelo (On the Heavens)</i>
<i>Cat.</i>	<i>Categoriae (Categories)</i>
<i>De An.</i>	<i>De Anima (On the Soul)</i>
<i>De Gen.</i>	<i>De Generatione et Corruptione (On Coming to Be and Passing Away)</i>
<i>De Gen. An.</i>	<i>De Generatione Animalium (On the Generation of Animals)</i>
<i>De Motu</i>	<i>De Motu Animalium (On the Movement of Animals)</i>
<i>EE</i>	<i>Ethica Eudemia (Eudemean Ethics)</i>
<i>EN</i>	<i>Ethica Nicomachea (Nicomachean Ethics)</i>
<i>fr.</i>	<i>fragmenta (fragments)</i>
<i>Hist. An.</i>	<i>Historia Animalium (History of Animals)</i>
<i>Insom.</i>	<i>De Insomniis (On Dreams)</i>
<i>Int.</i>	<i>De Interpretatione (On Interpretation)</i>
<i>Mem.</i>	<i>De Memoria et Reminiscentia (On Memory and Recollection)</i>
<i>Meta.</i>	<i>Metaphysica (Metaphysics)</i>
<i>Meteor.</i>	<i>Meteorologica (Meteorology)</i>
<i>PA</i>	<i>De Partibus Animalium (On the Parts of Animals)</i>
<i>Phys.</i>	<i>Physica (Physics)</i>
<i>Poet.</i>	<i>Poetica (Poetics)</i>
<i>Pol.</i>	<i>Politica (Politics)</i>
<i>Protr.</i>	<i>Protrepticus</i>
<i>Rhet.</i>	<i>Rhetorica (Rhetoric)</i>
<i>Sens.</i>	<i>De Sensu (On Sense (and Sensible Objects))</i>
<i>Som.</i>	<i>De Somno et Vigilia (On Sleep and Waking)</i>
<i>Top.</i>	<i>Topica (Topics)</i>

NOTES ON TRANSLATION AND AMENDMENTS TO TRANSLATION

The translation used here is the classic translation by R. D. Hicks, *Aristotle: De Anima*, with translation, introduction and notes (Cambridge: Cambridge University Press, 1907).

I have made a number of amendments to this translation in the light of: (i) the desirability of taking cognisance of more contemporary translations and commentaries; (ii) the need to update some aspects, particularly the philosophically relevant aspects, of the (now) rather old-fashioned language used in the original translation; (iii) the desirability of sticking to the literal translation of some technical terms on the grounds that no other translation readily conveys their sense. An outstanding example of this is Aristotle's technical phrase 'τὸ τί ἦν εἶναι' which I have left as 'what it is to be what it was' (of something), rather than translating it as 'quiddity', as Hicks does. (Cf. also my translation of 'τὸ . . . εἶναι' as 'what it is to be such' or 'what it is to be X', as opposed to Hicks's 'taken in the abstract', 'quiddity'; 'τὸ τί ἐστίν' as 'what a thing (something) is' as opposed to Hicks's 'the What'; 'κατὰ τὸν λόγον' as 'corresponding to the account of the thing' as opposed to Hicks's '(substance) as notion or form'.

My principal amendments are:

(a) Following Hamlyn's edition, I have, in general, translated 'αἴσθησις' and its cognates as 'perception', 'sense-perception' – rather than 'sensation', as Hicks does – on the grounds that 'to see', 'to hear', etc., are verbs of perception rather than verbs of sensation. In some places, however, we need to translate 'αἴσθησις' as 'sensation' or 'sense(s)', e.g. at 421a 9; 421a 19; 423a 9; 425a 20; 426a 8; 429a 31; 434b 14–15. In other places 'αἴσθησις' is used to refer to the sense organ, e.g. at 417a 3;

424a 18; 424a 32, although ‘τὸ αἰσθητήριον’ is Aristotle’s usual word for ‘sense-organ’. The occurrence of ‘αἴσθησις’ at 424a 4 is particularly problematic. Hamlyn and Sorabji strongly argue for ‘sense-organ’, but as I am still unhappy about this in the light of Slakey’s argument, I have left this occurrence translated as ‘sense’, following Hicks.

(b) Further, following Hamlyn, I have translated ‘ἐπιθυμία’ as ‘wanting’, rather than ‘desire’ or ‘concupiscence’ (Hicks); ‘ὄρεξις’ as ‘desire’ rather than ‘appetency’ or ‘appetite’ (Hicks) and ‘ὑπόληψις’ as ‘supposal’.

(c) Finally, I have translated ‘ἐντελέχεια ἡ πρώτη’ as ‘actuality in the first way’ as opposed to ‘first actuality’, in the light of Charlton’s argument; ‘φάντασμα’ as ‘phantasm’ rather than ‘image’, in the light of Bynum’s argument; ‘αἰτία’ and ‘(τὸ) διατί’ as ‘explanation’ rather than ‘cause’, save at, e.g., 430a 12; ‘δύναμις’, in general, as ‘capacity’, sometimes as ‘power’, as ‘potentiality’ in relation to ‘actuality’ (ἐντελέχεια), following Hicks, rather than, in certain cases, as Charlton’s more sophisticated ‘possibility’ on the grounds of (i) my worry concerning Charlton (see my Introduction, note 3 below); (ii) the difficulty of determining precisely which cases would legitimately be rendered as ‘possibility’; ‘ἐνέργεια’ in general as ‘activity’; ‘ἕνεκα’ as ‘for the sake of something’ and ‘(τὸ) δ’ οὐ ἕνεκα’ as ‘that for the sake of which’, as opposed to Hicks’s ‘end’ and ‘final cause’; ‘λόγος’ as ‘account’, ‘definition’, ‘principle’, ‘form’ (403a 25), ‘account/form’ (403b 4), ‘ratio’ according to context; I have avoided Hicks’s ‘notion’, ‘character’; ‘νοῦς’ and ‘νοῦς ποιητικός’ as ‘*productive* intellect’ bearing in mind Wedin’s point; ‘τὸ φρονεῖν’ as ‘understanding’, rather than Hicks’s ‘intelligence’.

INTRODUCTION

Michael Durrant

An historical–philosophical work may be judged as to its importance, by (a) reference to advances made by comparison with previous thought on its subject-matter; (b) its subsequent influence; (c) the extent to which it breaks new ground, presents new insights into old problems and enables progress to be made. By all three criteria Aristotle’s *De Anima* is a seminal work.

I

What, however, is the subject-matter of the *De Anima*? There is no immediate single simple answer to this question. Aristotle’s thought ranges from discussion of, e.g., the nature of nutriment (food), the physiological basis and analysis of sense-perception, the nature of the sense-organs, sight, sound, taste, colour and smell to what we should regard as distinctly philosophical questions, including highly technical philosophical questions such as ‘What is the relation between “psychological” doings, events, occurrences and physical events and occurrences?’; ‘What analysis can be given of perception?’; ‘What is the relation between judgement and perception?’; ‘What is imagination, and what is its relation to perception and thought?’; ‘Does all thought necessarily have a reference to bodily activity, or can there be such an activity as “pure thinking” (and hence the possibility of a “pure” intellect without a body)?’; ‘What is the relation between reason, wanting and action?’; ‘Is the soul a particular thing and a substance, or does it fall under one of the other categories?’; ‘What is the principle of individuation for souls?’.

Even so, from the fact that Aristotle presents us with such a

wide variety of topics it does not follow that we may not offer (a) some general characterization of his various enterprises; (b) some unifying principle.

The *De Anima* has sometimes been characterized as having as its major subject-matter the ‘philosophy of mind’.¹ I regard this characterization as unduly restrictive and to that extent misleading. For (i) some central problems which in late twentieth-century philosophy are regarded as falling under the scope of the ‘philosophy of mind’ simply do not arise for Aristotle (e.g. ‘What grounds are there for holding that there are other minds?’); (ii) those problems which do arise for both late twentieth-century philosophy and for Aristotle (e.g. ‘What is the relation between mental processes or states and physical processes and states which “accompany” them?’) for Aristotle form part of a much larger group of problems and interests – namely problems and interests concerned with the capacities, potentialities of *all living things*. For Aristotle, to have a soul is to have certain capacities which are the capacities of living things. To have a soul is to live; to have the capacities for living a certain kind of life. Thus for him there are in principle as many kinds of souls as there are kinds of living thing. Aristotelian souls are not limited to minds.

The general characterization we may at least tentatively offer of the enquiries in the *De Anima*, is, I suggest, that of ‘philosophical psychology’, in the sense that Aristotle’s enquiries concern the nature of the capacities of living things, ‘ensouled’ things, and that these enquiries:

- (1) are set broadly within the context of a philosophical approach and the employment of technical philosophical concepts;
- (2) are conducted by reference to a method which exhibits distinctive philosophical traits – Aristotelian dialectic;
- (3) whilst not being limited to the raising of what we should regard as philosophical questions, include such philosophical questions as a principal element and that where the questions raised are not philosophical (in our sense) in some cases they arise within the context of specific philosophical background – specific philosophical interests never being far away; in others they are in any case raised within the context of a general philosophical approach and background.

INTRODUCTION

The unifying principle, I suggest, is precisely Aristotle's concern with the soul in the sense of the capacities of natural bodies with organs: i.e. with the capacities of Xs which are living bodies since for him every (kind of) soul is the soul *of some natural body with organs, some living body*. It is thus quite natural that within a single enquiry we should find not only questions about, e.g., thinking and imagination but also questions about, e.g., the physiology of sense-perception and voice production.

II

I now turn to substantiate my opening thesis that the *De Anima* more than meets the criteria listed.

A. That the *De Anima* is an advance on previous thought on its subject-matter

For convenience I shall divide what I hold to be Aristotle's advances into the following categories:

- (1) approach to the subject-matter;
- (2) method;
- (3) contribution to theory; conceptual apparatus;
- (4) advances in points of substance.

(1) The *De Anima* presents the first *systematic* attempt to deal with a whole range of topics and problems falling under the general heading of 'Philosophical Psychology'. It is certainly true to say that the work is the first systematic attempt 'to provide an understanding of those functions which may be called "mental"'; but it is more than this, as I have argued and as Hamlyn seeks to acknowledge when he adds: 'as well as those which are more general functions of living things'.²

(2) The *De Anima* employs intellectually respectable aspects of (Aristotelian) dialectic, specifically those of (i) presenting ἀπορίαι (difficulties) for any received thesis; (ii) recognizing that one and the same word may have a number of uses according to type of context; (iii) disentangling and explicating such different uses to enable clarification to be made. To this latter we must add the marking of such different uses by the

employment of a technical vocabulary: e.g. the difference between potential knowledge and actual knowledge and the sophistication within this distinction.

(3) (i) It can be argued that the *De Anima* presents for the first time a set of views sufficiently sophisticated to constitute a genuine *theory*: indeed, that Aristotle is the first serious functionalist in the philosophy of mind or, as I should prefer to say, ‘philosophical psychology’. This case is well illustrated in Professor Wedin’s paper, ‘Tracking Aristotle’s *noûs*’ (Chapter IV below). Further within the work we have a powerful theory of perception which can rival not only older theories but ‘any that is currently in vogue’, as Professor Bynum cogently argues in ‘A new look at Aristotle’s theory of perception’ (Chapter II below).

(ii) The *De Anima* makes good use of technical vocabulary, technical conceptual apparatus both (a) as an aid to clarification and description; and (b) as an explanatory device. By such technical vocabulary, such technical conceptual apparatus, I mean, e.g., Aristotle’s distinction between (A) δύναμις and ἐνέργεια/ἐντελέχεια; the distinction between the *having* of a capacity, power or potentiality, and the *exercising* of that capacity, power, or the *actualization* of that potentiality; (B) the distinction between ‘ὕλη’ and ‘εἶδος, μορφή’, between ‘matter’ and ‘form’, which may be expressed as the distinction between the material or stuff out of which something (i.e. a certain kind or sort of thing) is made or composed and that in virtue of which a thing is the kind or sort of thing it is;³ (C) the distinction between what it is for a thing *to be* such and such, and such a sort of thing *existing*: cf. Professor Malcolm Lowe’s paper ‘Aristotle on kinds of thinking’ (Chapter III below); I refer particularly to his discussion of *De An.* III, 4, 429b 10–22 and how this distinction can be said to be utilized by Aristotle to enable him to distinguish between two different levels of thinking.

We should note, however, that in relation to such technical terms as, e.g., ‘ἐντελέχεια, ἐνέργεια, δύναμις’, Aristotle further recognizes that *these too* may have more than one use according to context. Such technical concepts *themselves* may need to be employed in different ways in order to bring illumination and clarification and to provide satisfactory means of explanation. Thus at *De An.* II, 2, 412a 10 he says that ‘ἐντελέχεια’ is used

INTRODUCTION

in two ways – knowledge is called ‘ἐντελέχεια’ in one way and contemplation is so called in another. The soul is an ἐντελέχεια in the first sense: cf. W. Charlton’s argument in his paper, ‘Aristotle’s definition of soul’ (Chapter VI below). As Charlton points out, Aristotle warns us that ‘δύναμις’ is used in more than one way. When used in connection with ‘change’, it means ‘power’, ‘capacity’ or ‘potentiality’, and equally ‘ἐνέργεια’ in such contexts means ‘exercise of power’, ‘exercise of a capacity’ or ‘actualization’. In other contexts – e.g. at *De An.* III, 431b 24–6, where there is implicit reference to universals and particulars being in ‘δύναμις’ and ‘ἐνέργεια’; where Aristotle speaks of some things *existing* in ‘δύναμις’; where Aristotle offers an analysis of matter in terms of ‘δύναμις’ and form in terms of ‘ἐνέργεια’, ‘ἐντελέχεια’ – Charlton contends that ‘δύναμις’ is best rendered as ‘possibility’, and ‘form’ as ‘fulfilment of possibility’. It cannot be denied that in so far as Charlton’s argument may be sustained, this reflects an even greater degree of sophistication on Aristotle’s part.

(iii) The question arises as to whether the technical conceptual apparatus Aristotle introduces is sophisticated enough for the purpose for which it is introduced. Hamlyn suggests that it is not.⁴ He holds that, e.g., the notion of ‘actuality’ is descriptive or clarificatory but not explanatory: it serves to distinguish the potentialities which a living thing has from the potentialities for movement or change possessed by inanimate bodies, but it does no more than this. I think we may reasonably claim that it does do more than this. In that the soul is said to be ‘actuality’ (in a certain sense) of a natural body which has life potentially and the *form* of a natural body with organs (412b 5; a 20), then to speak of the soul in such a way is explanatory: it renders intelligible what it is *to be a living* body of a certain kind (an F). It explains (a) *why* the organic body in question has the features it does have; (b) why it is constituted in a certain way.

The importance of the Aristotelian doctrine of ‘form’ can be exemplified in the following way. For Aristotle a house, e.g., is a shelter for certain purposes (cf. *Meta.* 1043a 31–3) made out of such and such definite types of material (e.g. wood, stone, bricks, etc.) put together in a certain determined way in order to perform its specific function; and it is *only* if the materials are of the sort they are and arranged in the way they are that a shelter for this purpose can be made. As Ackrill has neatly put the

matter: 'Its capacity to give shelter defines the kind of thing it is – makes it a house and also explains and makes intelligible its being made of bricks etc., so arranged.'⁵ The 'form' of a house thus offers us more than an account in the sense of a description; it is not simply an 'elucidatory' or 'clarificatory' concept. The 'form' of a house offers us an *explanation* as to why a house is composed of the matter it is and constituted in the way it is. In parallel fashion, the soul as 'form' offers us a functional account of what it is for a natural body with organs to be a certain kind of living thing, and it is only in that we understand the form of a natural body with organs that we understand *why* such and such a body has the characteristics it does have, and why, by analogy with the 'house' case, it is constructed (created) in a certain way. 'Form' here is not simply an elucidatory or clarificatory concept; it is an explanatory one, and in a central and crucial sense – it renders intelligible the physical characteristics and structure of the organic body concerned.

Not only does Aristotle recognize the importance of certain types of explanation (formal explanations); he also recognizes different *kinds* of explanation: 'formal' explanation ('formal' cause); 'material' explanation ('material' cause). For discussion of the importance of 'formal' explanations, 'formal' causes and 'formal' descriptions, I would refer the reader to Richard Sorabji's discussion in sections (vii) and (viii) of his paper 'Body and soul in Aristotle' (Chapter V below).

(4) (i) We may claim that Aristotle's thought on the soul in the *De Anima* is an advance on that of his predecessors, first, in at least the negative sense that he shows their views to involve serious difficulties, indeed absurdities, by the application of dialectic. This is well illustrated in Book I.

(ii) To these negative advances we may add: (a) Aristotle's recognition that a purely materialistic account of perception is not satisfactory, in spite of Professor Slakey's brilliant and classic attempt to defend Aristotle's subscription to such a view in his paper 'Aristotle on sense-perception' (Chapter I below); for criticism of Slakey, cf. section vii of Chapter V below; (b) his refusal to *assimilate* thought and perception, as his predecessors did, and, on the positive side, to distinguish between thought and perception and indeed between different kinds of thinking, as Professor Lowe argues (Chapter III below).

INTRODUCTION

- (iii) By way of *positive* advances we may adduce:
- (a) his arguments in II, 2, for, and the distinction between, different kinds of soul corresponding to different kinds of life.
 - (b) the doctrine that the sense (i.e. sense-organ) is that which can receive perceptible forms without matter (II, 12, 424a 17ff. – for a development of this point see p. 10 below);
 - (c) the argument that there is no *special* sense-organ for the common sensibles (III, 1, 425a 14ff.);
 - (d) the differentiation between imagination as a kind of thinking and ‘ὑπόληψις’ (supposal), III, 3, 427b 16;
 - (e) his comments on the faculty of desire in III, 10: an agent moves in that he *wants* something (433a 17ff.); the intellect does not produce movement *without desire* (433a 23).

The single most important advance Aristotle presents over his predecessors is his rejection of the soul as a special kind of substance – an immaterial entity which ‘inhabits’ the body. Aristotle is particularly caustic about the soul being regarded as an inner (material) substance (cf. I, 3, 407b 13ff.). For him the soul is distinctly not a substance in the sense of an entity, for whilst body (i.e. a particular body) is *not* something predicated of a subject, but *is* a subject (II, 1, 412a 18–20), the soul, by implication, *is* something predicated of a subject. The soul is said to be a substance, not *qua* being a subject of predication but *qua* form of a natural body which has life potentially. For the soul to be the form of a natural body which has life potentially is for the soul to be that in virtue of which a natural body is said to be alive: to have the capacity, potentiality, for a certain kind of life. To have the capacity for a certain kind of life, however, is clearly not an *entity*. As Sorabji argues (section i of Chapter V below), Aristotle thinks of the soul as a set of capacities. Crudely, to say that the man John has a human soul is to say that John (the man) has those capacities which are distinctive of human beings.

That this is an advance may be briefly defended as follows:

- (i) To posit the soul as an inner immaterial entity gives rise to the seemingly intractable problem of how that which is of its nature immaterial can be related to that which is of its nature material.
- (ii) If we construe the soul as an inner immaterial entity, having no reference to any body, how may we individuate and count such entities?
- (iii) If we hold that it is such an inner material entity that is the

proper subject of, e.g., wants and desires, then how may *I* ever *know* what another person wants or desires?

(iv) Further, on such a thesis, we would, it seems, be committed to holding that in saying, e.g., ‘John wants a beer’ and ‘John is going to the bar to get one’ we are talking about two different entities. It is John’s immaterial soul that *wants* a beer, yet it is his body that *moves* to the bar to get one. This strikes one as absurd since (a) it is clearly John, the man, who wants a beer – not his immaterial soul: one could not assert that John’s soul wanted a beer but that John (the man) did not; (b) it is not John’s body that moves to the bar *accompanied by* his soul; rather, it is John *the man* who moves to the bar. As John’s soul cannot want a beer independently of John the man wanting a beer, equally John’s body cannot move to the bar independently of John. It could not be true that John’s body moves to the bar but that John the man does not. As Ackrill observes:⁶

it may well be useful to classify certain facts about Tom as psychological facts and other facts as physical facts; but this does not mean that the two sets of facts are about different things; they are about the same thing, viewed in different ways, under different aspects.

It is John *the man* who is the subject and proper subject of ‘psychological predicates’, and in his doctrine that a soul is always the soul *of something or other* (man, animal, plant) and hence that with one possible exception (the productive mind, intellect) a soul cannot exist in separation from that of which it is the soul, Aristotle may be said to have realized this. Indeed, in the light of Professor Wedin’s paper (Chapter IV below) we may reasonably hold that the ‘one possible exception’ just given is *no* exception, for Wedin cogently argues for a finitistic interpretation of ‘noûs’ in *De An.* III, 4, 5. He argues that the ‘transcendental’ characteristics attributed to the productive mind/intellect set forth at 430a 17–23 can apply to the productive mind/intellect as *activity only* of episodes of individual thought.

B. The subsequent influence of the *De Anima*

It cannot be doubted that the subsequent influence of the *De Anima* has been considerable,⁷ e.g., on the writings of St

INTRODUCTION

Thomas Aquinas. This is not to say that Aquinas in, e.g., his discussion of the intellect mirrors Aristotle; indeed, it can be held that Aquinas may be credited with marked originality 'in producing an interpretation of Aristotle that achieves a far greater degree of system than anything in the text of the *De Anima*'.⁸

In comparatively recent times we may cite, e.g., Brentano and Ryle. This is not to say that Aristotle's thought is to be equated with that of Brentano or even that we have in Aristotle the embryo of Brentano's 'intentional inexistence' theory. Sorabji (Chapter V below) draws our attention to crucial contrasts between the two authors. Again, we may not say that Aristotle, as it were, takes out an advance draft on Ryle, or even that he takes the same path as Ryle. To hold such a view would be a mistake as Sorabji (section x, p. 180) rightly points out; but the Aristotelian influence cannot be denied. In yet more recent times we may cite K. Wilkes, who, in her outline of a functional account of the soul, actually ends by suggesting that the account for which she has been arguing amounts, in all essentials, to the thesis of the *De Anima*.⁹ This is not to say that her account does amount in all essentials to the functionalist thesis of the *De Anima* so that we may claim that in it we have a direct antecedent for her position. Such a claim has been argued against in detail by Lawson-Tancred.¹⁰ My purpose in citing these cases is very briefly to illustrate the continuing influence of the *De Anima*.

C. The extent to which the *De Anima* breaks new ground, presents new insights and enables progress to be made

From my earlier discussion in (A) above, we may adduce at least the following: (i) it saves us from the error of treating the soul as an immaterial substance and from the subsequent problems of dualism; (ii) it offers us a new account of the soul in terms of a set of capacities; (iii) it presents us with a technical apparatus which permits not only description and clarification but also explanation and different levels (types) of explanation; (iv) it presents us with a plausible functionalist theory in the 'philosophy of mind/philosophical psychology'.

To these initial points we may add that (v) the *De Anima* contains a theory of sense perception as a powerful causal

theory which may be held to make a specific contribution to ongoing scientific research. As Bynum (Chapter II below) argues, Aristotle developed a very sophisticated theory of perception which can be updated to make such a contribution; it is not 'merely of historical interest'. This very important aspect of Aristotle's theory is initially developed by Bynum at the end of his paper with specific reference to a contemporary version of Aristotle's theory of 'receiving the form without matter'. By combining Aristotle's theory with modern information technology and computer science, we have, it may be argued, the basis for answering such questions as 'In what sense do causal traces of sensed objects contain or convey information about those objects?'; 'How do such traces "represent" the objects?' – as, Bynum holds, Ackrill¹¹ and Baumrind¹² have realized. (vi) Aristotle's appreciation (to say the least) that it is the *understanding* and *elucidation* of the concepts of perception, sensation, etc., that should be the primary aim of the philosophy of perception, not the issue of the *justification* of, e.g., the claim of the senses to provide knowledge. Indeed, as Hamlyn has observed:¹³

Aristotle has little interest in attempts to justify the claim of the senses to provide knowledge and his account contains practically nothing of the paraphernalia of such attempts – the appeal to sense data and the like. His account is elucidatory rather than justificatory. This is not in any way a criticism of Aristotle; quite the contrary. It is the understanding of the concepts of perception etc. which should be the primary aim of philosophy in this field. The scepticism which underlies the demand for justification arises most often from misunderstanding concerning these concepts.

Attempts to *justify*, e.g., the thesis that our senses are reliable can be shown to reveal a misunderstanding.¹⁴ As Ackrill has put the matter:¹⁵

Such scepticism about the existence of other minds, and sceptical questions about our knowledge about other people's thoughts and feelings do not worry Aristotle. He takes for granted (here as elsewhere) what we all cannot help taking for granted; he does not try to prove or justify the obvious.

INTRODUCTION

However, we may go further than simply saying that Aristotle appreciates that scepticism about the claim of the senses to produce knowledge or about the existence of other minds and knowledge of other people's 'mental activities' is out of place arises from failure to understand. We may point out that Aristotle's theory of the relation of soul and body *prevents* such sceptical doubts from being raisable (cf. Sorabji, Chapter V below, part 2, section iv). Aristotle not only does not try 'to justify the obvious' but presents us with a theory which offers us a plausible explanation of why we may not seek so to justify. He does not simply 'leave everything as it is'.

All this is not to say that Aristotle's views as expressed in the *De Anima* are free from serious problems or worries. Charlton (Chapter VI below) points out some important defects, e.g. the apparent failure to specify quite clearly the difference between the notion of the soul being the notion of an *entelecheia* and being a 'thing which is in *dunamis*', a difference which Aristotle himself emphasizes. Again, as Sorabji points out (Chapter V below), it seems that by making the link between flesh and its function so tight, Aristotle runs into Ackrill's objection 'that he is unable to pick out the matter in which soul resides in such a way that the matter could be conceived of as existing without a soul'.¹⁶ Sorabji interestingly suggests a looser link by which Aristotle may be able to avoid this objection.¹⁷ Hamlyn has presented other worries.¹⁸ Some of these I hold to be unfair, e.g. the claim that Aristotle's dealings with the traditional mind/body problems are 'perfunctory'. Granted Aristotle's position, one could hardly expect such treatment to be otherwise: he rejects dualism. Further, Hamlyn's criticism of Aristotle on imagination seems to be based on the unduly limited view of imagination as 'decayed perception'. Others certainly merit detailed attention, e.g. the apparently fragmentary nature of the rest of the work after the discussion of the intellect. I have not space here to respond to Hamlyn's criticism. I would, however, refer the reader to, e.g., Ackrill's discussion in chapter 5 of *Aristotle the Philosopher*, which provides some bases for a rejoinder to some of Hamlyn's criticisms. Again, we may press that Aquinas achieves a far greater degree of systematization than is present in the *De Anima* (cf. (B) above).

The *De Anima*, as with much other Aristotelian work, is a *pioneering* work. Bearing this in mind, despite some clear

worries, problems and uncertainties which we may express and, indeed, may expect in relation to such work, we cannot fail to be impressed by the originality, depth, insight and sophistication present in it, rendering the *De Anima* a work of unceasing interest and value. Had not Aristotle broken the ground, we would not be able to till it.

NOTES AND REFERENCES

- 1 D. W. Hamlyn, *Aristotle's 'De Anima', Books II and III*, translated with introduction and notes (Oxford: Clarendon Press, 1969) (Clarendon Aristotle Series); Introduction, p. ix; J. L. Ackrill, *Aristotle the Philosopher* (Oxford: Clarendon Press, 1981), ch. 5.
- 2 *Ibid.*, p. xv.
- 3 Charlton (Chapter VI below) argues for a more sophisticated account of this distinction in terms of 'possibilities' and 'fulfilments of possibilities'. This account has the distinct merit of explaining Aristotle's point that form and matter are one but it is, to say the least, unclear how his account of 'form' as 'fulfilment of possibility' relates to Aristotle's view of form as function. Can it be held that fulfilment of a possibility is a function? Charlton gives as form expressions 'thing which perceives', 'thing which thinks'. Now to say, e.g., 'X is a thing which thinks' is to define X by reference to function; but for Aristotle soul is a capacity or function. Take the famous 'house' example of the *Metaphysics*. A house is defined by reference to its function as a shelter but that which specifies, defines, its function (being a shelter) is not *itself* defined by reference to its function; it is itself a function or capacity. Charlton's case would seem to require that Aristotelian forms and souls are Xs which are defined by reference to function as opposed to being functions.
- 4 Hamlyn, *Aristotle's 'De Anima'*, p. x.
- 5 Ackrill, *Aristotle the Philosopher*, p. 75.
- 6 *Ibid.*, p. 56.
- 7 For a short useful sketch of the 'intensive study' the *De Anima* received in the millennium between Alexander of Aphrodisias and St Thomas Aquinas, even though it was largely vitiated by being so much occupied with a question of, at the most, only secondary interest to Aristotle (viz. that of the immortality of the soul), cf. Hugh Lawson-Tancred, *Aristotle: 'De Anima'*, translated with introduction and notes (Harmondsworth: Penguin Books, 1986), pp. 96–100. For a general account of Aristotle's influence, cf. G. E. R. Lloyd, *Aristotle: The Growth and Structure of his Thought* (Cambridge: Cambridge University Press, 1968), pp. 306–15.
- 8 Lawson-Tancred, *Aristotle: 'De Anima'*, pp. 91–2.
- 9 K. Wilkes, *Physicalism* (London: Routledge & Kegan Paul, 1978), p. 115.

INTRODUCTION

- 10 Lawson-Tancred, *Aristotle: 'De Anima'*, pp. 106–11.
- 11 Ackrill, *Aristotle the Philosopher*, pp. 66–7.
- 12 Judith Marti Baumrim, 'Aristotle's empirical nativism', *American Psychologist* 30 (1975), 486–94, and 'Active power and causal flow in Aristotle's theory of vision', *Journal of the History of the Behavioral Sciences* 12 (1976), 254–9.
- 13 Hamlyn, *Aristotle's 'De Anima'*, p. xii
- 14 Michael Durrant, 'Scepticism: three recently presented arguments examined', *Philosophical Investigations* 14, no. 3 (1991), 252–66.
- 15 Ackrill, *Aristotle the Philosopher*, p. 59.
- 16 In J. L. Ackrill, 'Aristotle's definition of *psuche*' (1979); reprinted in Jonathan Barnes, Malcolm Schofield, and Richard Sorabji (eds) *Articles on Aristotle*, Vol. 4: *Psychology and Aesthetics* (London: Duckworth, 1979).
- 17 Chapter V below.
- 18 Hamlyn, *Aristotle's 'De Anima'*, pp. xii–xiv.

DE ANIMA: BOOK I

Passages from Book I, pertinent to the arguments in Books II and III

CHAPTER 1

402a 1. Knowledge is in our eyes a thing of beauty and worth, and this is true of one kind more than another, either because it is exact or because it relates to more important and remarkable things. On both these grounds we may with good reason claim a high place for the enquiry concerning the soul. It would seem, too, that an acquaintance with the subject contributes greatly to the whole domain of truth and, more particularly, to the study of nature, the soul being, so to speak, the principle of all animal life.

402a 7. Our aim is to discover and ascertain the nature and substance of the soul, and, in the next place, all the accidents belonging to it; of which some are thought to be affections peculiar to the soul itself, while others, it is held, belong to the animal also, but owe their existence to the soul. But everywhere and in every way it is extremely difficult to arrive at any trustworthy conclusion on the subject. It is the same here as in many other enquiries. Our enquiry concerns substance and what a thing is. It might therefore be thought that there is a single procedure applicable to all things whose substance we wish to know, as demonstration is applicable to the incidental properties which go along with them: in that case we should have to enquire what this procedure is. If, however, there is no single procedure common to all subjects for determining what something is, our task becomes still more difficult, as it will then be necessary to settle in each case the method to be pursued. Further, even if it is evident that it consists in demonstration of some sort or division or some other procedure, there is still room for much perplexity and error, when we ask from what

principles our enquiry should start, for there are different principles for different sciences; for the science of numbers, for example, and plane geometry.

402a 23. The first thing necessary is no doubt to determine under which of the genera soul comes and what it is; I mean, whether it is a particular thing, and substance, or is quality or is quantity, or falls under any other of the categories already determined. We must further ask whether it is amongst those things which exist in potentiality or is rather a kind of actuality, the distinction being all-important. Again, we must consider whether it is divisible or indivisible; whether, again, all and every soul is homogeneous or not; and, if not, whether the difference between the various souls is a difference of species or a difference of genus: for at present discussion and investigations about soul would appear to be restricted to the human soul. We must take care not to overlook the question whether there is a single definition of soul as there is of animal; or whether there is a different definition for each, as for horse and dog, man and god: animal, as the universal, being regarded either as nothing, or as logically posterior. This is a question which might equally be raised in regard to any other common predicate. Further, on the assumption that there are not several souls, but merely several different parts in the same soul, it is a question whether we should begin by investigating soul as a whole or its several parts. And here again it is difficult to determine which of these parts are really distinct from one another and whether the several parts, or their functions, should be investigated first. Thus, e.g., should thinking come first or the intellect, perceiving or that which can perceive? And so everywhere else. But, if the functions should come first, again will arise the question whether we should first investigate the corresponding objects. Shall we take, e.g., the object of perception before that which can perceive and the intelligible object before the intellect?

402b 16. It would seem that not only is knowledge of what a thing is useful for discovering the reasons for its incidental properties – as, e.g., in mathematics the knowledge of what straight or curved, line or surface, are, aids us in discovering to how many right-angles the angles of a triangle are equal; but also, conversely, a knowledge of the attributes is a considerable aid to the knowledge of what a thing is. For when we are able to

give an account of all, or at any rate most, of the attributes as they are presented to us, then we shall be in a position to define most exactly the substance of the thing. In fact, the starting-point of every demonstration is what something is. Hence the definitions which lead to no information about attributes and do not facilitate even conjecture respecting them have clearly been framed for dialectic and are void of content, one and all.

403a 3. A further difficulty arises as to whether all affections of the soul are also shared by that which has the soul or whether any of them are peculiar to the soul itself: a question which is indispensable, and yet by no means easy. It would appear that in most cases soul neither acts nor is acted upon apart from the body: as, e.g., in anger, confidence, wanting and perceiving in general. Thinking, if anything, would seem to be peculiar to the soul. Yet, if thinking is a sort of imagination, or not independent of imagination, it will follow that even thinking cannot be independent of the body. If, then, there be any of the functions or affections of the soul peculiar to it, it will be possible for the soul to be separated from the body: if, on the other hand, there is nothing of the sort peculiar to it, the soul will not be capable of separate existence. As with the straight line, so with it. The line, *qua* straight, has many properties; for instance, it touches the brazen sphere at a point; but it by no means follows that it will so touch it if separated. In fact it is inseparable, since it is always found in body of some sort. So, too, the affections of the soul all appear to involve the body: such affections as passion, mildness, fear, pity, courage; also joy, loving and hating; all of which are attended by some particular affection of the body. This indeed is shown by the fact that sometimes violent and striking sufferings occur without producing in us exasperation or fear, while at other times we are moved by slight and scarcely perceptible sufferings, as when the blood is up and the bodily condition is that of anger. Still more is this evident from the fact that sometimes even without the occurrence of anything terrible men exhibit all the symptoms of terror. If this be so, the affections [of the soul] are evidently forms involving matter. Hence they must be defined accordingly: anger, for instance, as a certain movement in a body of a given kind, or some part or capacity of it, produced by such and such and for the sake of such and such. These considerations at once bring the

investigation of soul, whether of every soul or of a soul of a particular sort, within the province of the natural philosopher.

403a 29. But every such affection would be differently defined by the natural philosopher and the dialectician. Anger, for instance, would be defined by the dialectician as desire for retaliation or the like; by the natural philosopher as a boiling of the blood and hot stuff which is about the heart: the one of them gives the matter, the other the form and account. For [what corresponds to] the account is the form of the thing, but this form, if it is to be, must be realized in matter of a particular kind; just as in the case of a house. The account/form of a house would be as follows: a shelter to protect us from harm by wind or rain or heat; while another will describe a house as stones, bricks and timber; and again another as the form realized in these materials for the sake of these other things. Which then of these is the natural philosopher? Is it he who confines himself to the matter whilst ignoring the account/form? Or he who treats of the account/form exclusively? I answer, it is rather he who takes account of both. What then of each of the other two? Or shall we rather say that there is no one who deals with properties of matter which are not separable nor yet treated as separable, but the natural philosopher deals with all the functions or affections belonging to a body of a given sort and matter of a given sort? Anything not of this kind he leaves to someone else: who in certain cases is an expert, a carpenter, for instance, or a physician. The properties which, though inseparable, are not regarded as properties of body of a given sort, but are reached by abstraction, fall within the province of the mathematician: while properties which are regarded as separable fall to the 'first philosopher'. But to return to the point of digression. We were saying that the affections of the soul, in so far as they are such as passion and fear, are inseparable in this way from the natural matter of the animals to which they belong, and not in the same way as a line or surface.

CHAPTER 3

407b 12. But such an enquiry as this belongs more appropriately to a different subject: so let us dismiss it for the present. We may, however, note here another absurdity which is involved

TRANSLATION OF TEXT

in this as in most other theories concerning the soul. They attach the soul to, and enclose it in, body, without further determining why this is so or the bodily conditions required for it. And yet some such explanation would seem to be required, as it is owing to some community of nature that the one acts, the other is acted upon, that the one is moved, and the other causes it to move; and between two things taken at random no such mutual relations exist. The supporters of such theories merely undertake to describe the nature of the soul. Of the body which is to contain it they have nothing more to say: just as if it were possible for any soul taken at random, according to the Pythagorean stories, to pass into any body. This is absurd, for each body appears to have a distinctive form or shape of its own. It is just like suggesting that carpentry could embody itself in flutes: for the crafts must employ the right tools and the soul the right body.

CHAPTER 4

408a 34. The following considerations present an even better reason for raising the question whether the soul is moved. We speak of the soul as being grieved or joyful, confident and afraid, and again as being angry, perceiving and thinking. And all these are held to be movements – which might lead one to infer that the soul itself is moved; but this is no necessary inference. For suppose it ever so true that being grieved, being joyful and thinking are movements, that each of these consists in being moved and that the movement is due to the soul: suppose that to be angry, for instance, or to be afraid means a particular movement of the heart, and that to think means a movement of this or of some other part, some of these movements being movements of locomotion, others of qualitative change (of what sort and how produced does not concern us here): yet, even then, to speak of the soul as angry is as if one should say that the soul weaves or builds. Doubtless it would be better not to say that the soul pities or learns or thinks, but that the man does so with the soul: and this, too, not in the sense that the movement occurs in the soul, but in the sense that the movement sometimes reaches to, sometime starts from the soul. Thus, perception originates in particular objects, while recollection, starting from the soul, is directed towards the movements or traces of movements in the sense-organs. But intellect

would seem to be generated in us as a sort of substance and to be imperishable. For, if anything could destroy it, it would be the feebleness of age. But, as things are, no doubt what happens is exactly parallel to what happens in the case of sense-organs. If an aged man could procure an eye of the right sort, he would see just as well as a young man. Hence old age must be due to an affection or state not of the soul as such, but of that which the soul is in, just as is the case in intoxication and disease. In like manner, then, thought and the exercise of knowledge are enfeebled through the loss of something else within, but are in themselves unaffected. But thinking, loving and hating are not affections of the thinking faculty but of its individual possessor, in so far as he possesses it. Hence, when this possessor perishes, there is neither memory nor love: for these never did belong to the thinking faculty, but to the composite whole which has perished, while the intellect is doubtless a thing more divine and is unaffected.

CHAPTER 5

410a 13. 'Being', again, is a term which is used in many ways, signifying sometimes the particular thing, sometimes quantity or quality or any other of the categories which have been already determined. Is the soul to be derived from all of these, or not? It cannot be: the general opinion is that there are no elements common to all the categories. Does the soul, then, consist of those elements alone which are the elements of substances? How then does it know each of the other kinds of thing? Or will they say that each kind of thing has special elements and principles of its own, and that the soul is composed of these? Then soul will be at once quantity, quality and substance. But it is impossible from the elements of quantity to derive substance or anything but quantity. These, then, and others like them are the difficulties which confront those who derive soul from all the elements. There is a further inconsistency in maintaining that like is unaffected by like and yet at the same time that like perceives like and knows like by like. Yet they hold that perceiving is a sort of being acted upon or moved. And similarly for thinking and knowing.

DE ANIMA: BOOK II

CHAPTER 1

412a 1. So much for the theories of the soul handed down by our predecessors. Let us, then, make a fresh start and try to determine what the soul is and what will be its most comprehensive account. Now there is one class of existent things which we call substance, including under the term, first, matter, which in itself is not a this or that, not a particular; second, shape or form in virtue of which it is then a this or that, a particular; third, the composition of the two. Matter is potentiality; form, actuality. And 'actuality' is used in two ways: knowledge illustrates the one, exercise of knowledge the other. Now bodies above all things are held to be substances, particularly such bodies as are the work of nature; for to these all the rest owe their origin. Of natural bodies some possess life and some do not: where by life we mean self-nourishment, independent growth, and decay. Consequently every natural body possessed of life must be substance, and substance of a composite kind. And since, in this case, we have a body of such and such a kind, namely one having life, the soul will not be body: for the body is not something predicated of a subject, it stands rather as a subject of predication and is matter. It must follow, then, that soul is substance in the sense that it is the form of a natural body having in it the capacity of life. Such substance is actuality. The soul, therefore, is the actuality of the body above described. But the term 'actuality' is used in two ways; in the one it answers to knowledge, in the other to the exercise of knowledge. Clearly in this case it is analogous to knowledge: for sleep, as well as waking, implies the presence of soul; and, whilst

waking is analogous to the exercise of knowledge, sleep is analogous to the possession of knowledge without its exercise; and in the same individual the possession of knowledge comes in order of time before its exercise. Hence soul is actuality in the first way, of a natural body having in it the capacity of life. And a body which is possessed of organs answers to this description. We may note that the parts of plants, as well as those of animals, are organs, though of a very simple sort: for instance, a leaf is the sheath of the pod and the pod of the fruit. The roots, again, are analogous to the mouths of animals, both serving to take in nourishment. If, then, we have to make a general statement touching soul in all its forms, the soul will be actuality in the first way of a natural body furnished with organs. Hence there is no need to enquire whether soul and body are one, any more than whether the wax and the imprint are one; or, in general, whether the matter of a thing is the same with that of which it is the matter. For, of all the various uses of the terms 'unity' and 'being', actuality is the use which belongs to them most properly.

412b 10. It has now been stated in general terms what soul is, namely substance as that which corresponds to the account of a thing. And this is 'what it is for it to be what it was' for a body of such and such a kind. Suppose, for example, that an instrument, say an axe, were a natural body, its axiety (i.e. what it would be for it to be an axe) would be its substance, would in fact be its soul. If this were taken away, it would cease, except in an equivocal sense, to be an axe. But the axe is after all an *axe*. For it is not a body of *this* kind that the soul is 'what it is for it to be what it was' and principle (that which corresponds to the account) but of a natural body of a particular sort, having in itself the source of movement and rest.

412b 17. Further we must view our statement in the light of the parts of the body. For, if the eye were an animal, eyesight would be its soul, this being the substance of the eye, corresponding to the account. The eye is the matter of eyesight, and in default of eyesight it is no longer an eye, except equivocally like an eye in stone or in a picture. What has been said of the part must be understood to apply to the whole living body; for, as the perception of a part of the body is to that part, so is perception as a whole to the whole perceptive body as such. By

TRANSLATION OF TEXT

that which has in it the capacity of life is meant not the body which has lost its soul, but that which possesses it. Now the seed in animals, like the fruit in plants, is that which is potentially such and such a body. As, then, the cutting of the axe or the seeing of the eye is actuality, so too is the waking state; while the soul is actuality in the same sense as eyesight and the capacity of the instrument. The body, on the other hand, is simply that which is this potentially. But, just as in the one case the eye means the eye-jelly in conjunction with the eyesight, so in the other soul and body together constitute the animal.

413a 5. Now it needs no proof that the soul – or, if it is divisible into parts, certain of its parts – cannot be separated from the body, for there are cases where the actuality belongs to the parts themselves. There is, however, no reason why some parts should not be separated, if they are not the actualities of any body whatever. Again, it is not clear whether the soul may not be the actuality of the body as the sailor is of the ship. This, then, may suffice for an outline or provisional sketch of the soul.

CHAPTER 2

413a 11. But, as it is from the things which are naturally obscure, though more easily recognized by us, that we proceed to what is clear and, more intelligible in accordance with an account, we must employ this method in trying to give a fresh account of soul. For it is not enough that the defining statement should set forth the fact, as most definitions do; it should also contain and present the reason: whereas in practice what is stated in the definition is usually no more than a conclusion. For example, what is squaring? The construction of an equilateral rectangle in area to a given oblong. But such a definition expresses merely the conclusion. Whereas, if you say that squaring is the discovery of a mean proportional, then you state the reason.

413a 20. We take, then, as our starting-point for discussion that it is life which distinguishes the animate from the inanimate, the ensouled from that which has no soul. But the term 'life' is spoken of in many ways, and, if life is present in but a single one of these ways, we speak of a thing as 'living'. Thus there is

intellect, perception, movement from place to place, and rest, the movement concerned with nutrition and, further, decay and growth. Hence it is that all plants are supposed to have life. For apparently they have within themselves a capacity and principle whereby they grow and decay in opposite directions. For plants do not grow upwards without growing downwards; they grow in both directions equally, in fact in all directions, as many as are constantly nourished and therefore continue to live, so long as they are capable of absorbing nutriment. This form of life can be separated from the others, though in mortal creatures the others cannot be separated from it. In the case of plants the fact is manifest: for they have no other capacity of soul at all.

413b 1. It is, then, in virtue of this principle that all living things live, whether animals or plants. But it is sense perception primarily which constitutes the animal. For, provided they have sense perception, even those creatures which are devoid of movement and do not change their place are called animals and are not merely said to be alive. Now the primary sense in all animals is touch. But, as the nutritive faculty may exist without touch or any form of sense perception, so also touch may exist apart from the other senses. By nutritive faculty we mean the part of the soul in which even plants share. Animals, however, are found universally to have the sense of touch: why this is so in each of the two cases will be stated hereafter.

413b 11. For the present it may suffice to say that the soul is the source of the functions above enumerated and is determined by them: namely, by capacities of nutrition, perception, thought, and by movement. But whether each one of these is a soul or part of a soul and, if a part, whether it is only distinct in account or separable in space also, is a question the answer to which is in some cases not hard to see: other cases present difficulties. For, just as in the case of plants some of them are found to live when divided and separated from each other (which implies that the soul in each plant, though actually one, is potentially several souls), so, too, when insects are cut up, we see the same thing happen with other varieties of soul: I mean, each of the parts has sense perception and moves from place to place, and, if it has sense perception, it has also imagination and desire. For, where there is sense perception, there is also pleasure and pain: and, where these are, wanting also must of

necessity be present. But as regards intellect and the capacity for contemplation the case is not yet clear. It would seem, however, to be a different kind of soul, and it alone is capable of separation from the body, as that which is eternal from that which is perishable. The remaining parts of the soul are, as the foregoing consideration shows, *not* separable in the way that some allege them to be: at the same time it is clear that they are different in account. For being able to perceive and being able to believe are different, since to perceive and to believe are different. And so it is likewise with each of the other things mentioned above. Again, while some animals possess all these functions, others have only some of them, others only one. It is this which will differentiate animal from animal. The reason why this is so must be investigated hereafter. The case is similar with the several senses: some animals have all of them, others some of them, others again only one, the most indispensable: that is, touch.

414a 4. Now 'that by which we live and perceive' is spoken of in two ways just as with 'that by which we know' (the latter phrase means, first, knowledge and, second, soul, by either of which we say we know). Similarly, 'that by which we have health' means either 'health itself' or 'a certain part, if not the whole, of the body'. Now of these knowledge and health are shape, and a kind of form and principle, and as it were activity, of that which is capable of receiving in the one case knowledge, in the other health: that is to say, it is in that which is acted upon that the activity of that which is capable of acting would seem to take place. Now the soul is that whereby primarily we live, perceive and think: therefore it will be a kind of principle and form, not matter or subject. Of the three ways in which substance is spoken of mentioned above, form, matter and the whole made up of these two, matter is potentiality and form is actuality. And, since the whole made up of the two is an ensouled thing, the body is not the actuality of soul, but soul the actuality of a particular kind of body. Hence those are right who regard the soul as not independent of body and yet at the same time as not itself a species of body. It is not body, but something belonging to body, and therefore exists in body and, what is more, in such and such a kind of body. Our predecessors were wrong in endeavouring to fit the soul into a body without further determination of the nature and qualities of

that body: although we do not even find that of two things taken at random the one will admit the other. And this result is what we might expect. For the actuality of each thing comes naturally to be developed in the potentiality of each thing: in other words, in the appropriate matter. From these considerations, then, it is manifest that soul is actuality in a certain sense, and principle (corresponding to the account), of that which has the capacity to be such.

CHAPTER 3

414a 29. Of the capacities of soul above mentioned, namely, those of nutrition, desire, sense perception, locomotion and thought, some living things, as we remarked, possess all, others some, others again only one. Plants possess the nutritive faculty only: other things along with this have sense perception; and, if sense perception, then also desire: where under desire we include wanting, passion and wishing. But all animals have at least one sense, touch: and, where sense perception is found, there is pleasure and pain, and that which causes pleasure and pain; and, where these are, there also is wanting, this being desire for what is pleasurable. Again, they have a sense concerned with nutriment, touch being such a sense. For it is by what is dry and moist, hot and cold, that all living things are nourished (and these qualities are perceived by touch, whereas the other objects of perception are not, except incidentally): for sound, colour and odour contribute nothing to nutriment, while flavour is one of the tangible objects. Hunger, again, and thirst are forms of wanting the one for what is hot and dry, the other for what is cold or moist; flavour, as it were, the seasoning of these. We will deal with these in detail hereafter: at present let it suffice to say that all animals which have sense of touch also have desire. Whether they have imagination is not clear: this, too, must be considered later. Some have in addition the power of locomotion. Others – that is to say, man and any other species like man or, possibly, superior to him – have also the thinking faculty and intellect.

414b 20. From this it is clear that there is one definition of soul exactly as there is one definition of figure: for there is in the one case no figure excepting triangle, quadrilateral and the rest, nor is there in the other any species of soul apart from those

TRANSLATION OF TEXT

above mentioned. Again, a common definition might be constructed which should apply to all figures, but not specially to any one kind of figure. And similarly with the kinds of soul above enumerated. Hence it would be absurd here as elsewhere to seek a common definition which will not be properly a definition of anything in existence and will not be applicable to the particular irreducible species before us, to the neglect of the definition which is so applicable.

414b 28. The types of soul resemble the series of figures. For, alike in figures and in things which have soul, the earlier form exists potentially in the later, as, for instance, the triangle potentially in the quadrilateral, and the nutritive faculty in that of perception. So that we must examine in each case separately, what is the soul of plant, of man or of beast. Why they are related in this order of succession remains to be considered. There is no perceptive faculty apart from the nutritive: and yet the latter exists without the former in plants. Again, none of the other senses is found apart from touch; while touch is found apart from the others, many animals having neither sight nor hearing nor sense of smell. Also of those which can perceive, some can move from place to place, others cannot. Lastly and most rarely, they have reason and thought. For those perishable creatures which possess reason are endowed with all the other faculties, but not all those which possess each of the other faculties have reason. Indeed, some of them have not even imagination, while others live by imagination alone. As for the contemplative intellect, it calls for a separate discussion. Meanwhile it is clear that an account of the several faculties is at the same time the most appropriate account of soul.

CHAPTER 4

415a 14. The enquirer who approaches this subject must ascertain what each of these faculties, capacities, is before he proceeds to investigate the questions next in order and so forth. But if we are asked to state what each of these is, that is so say, what the thinking, perceptive and nutritive faculties respectively are, we must begin by stating what thinking is and what perception is. For activities and actions are logically prior, in respect of definition, to faculties. But if so, and if a study of the

correlative objects should have preceded, these objects will for the same reason have to be determined first: I mean, nutriment and the objects of perception and thought. Consequently we have first to treat of nutrition and of generation.

415a 23. The nutritive soul belongs to other living things as well as man, being the first and most widely distributed capacity or faculty, in virtue of which all things possess life. Its functions are reproduction and assimilation of nutriment. For it is the most natural function in all living things, if perfect and not defective or spontaneously generated, to reproduce their species; animal producing animal and plant plant, in order that they may, so far as they can, share in the eternal and the divine. For it is that which all things yearn after and that for the sake of which they do that which is in accordance with their nature. 'That for the sake of which' is used in two ways, either the *purpose for which* or the *person for whom* a thing is done. Since, then, individual things are incapable of sharing continuously in the eternal and the divine, because nothing in the world of perishables can remain numerically one and the same, they share in the eternal and divine, each in the only way it can, some more, some less. This is to say, each persists, though not in itself, yet in a representative which is specifically, not numerically, one with it.

415b 8. Now the soul is cause and first principle of the living body. But 'cause' and 'principle' are terms used in several ways: accordingly soul is cause in the three ways already distinguished. For the soul is the cause of ensouled bodies as being in itself the origin of movement; as that for the sake of which movement occurs; and as the being of ensouled bodies, as substance. Clearly it is so as substance, substance being the cause of existence. And for the living things existence means life, and it is the soul which is the cause and first principle of life. Furthermore, actuality is the principle of that which has potential existence. Manifestly, too, the soul is that for the sake of which. For nature, like the intellect, acts for the sake of something, and this something is for it an end. Such an end the soul is in animals, and this in the order of nature, for all the natural bodies are instruments for soul: and this is as true of the bodies of plants as of those of animals, showing that all exist for the sake of soul; but 'that for the sake of which' is spoken of in two

ways; the purpose for which and the person for whom. Moreover, the soul is also the origin of movement from place to place, but not all living things have this power of locomotion. Qualitative change, also, and growth are due to soul. For perception is supposed to be a sort of qualitative change, and nothing devoid of soul has perception. The same holds of growth and decay. For nothing undergoes natural decay or growth except it be nourished, and nothing is nourished unless it shares in life.

415b 28. Empedocles is mistaken in adding that in plants, in so far as they strike their roots downwards, growth takes place because the earth in them has a natural tendency in this direction and that, when they shoot upwards, it is because the fire in them has a similar tendency upwards. He is wrong in his view of up and down. For up and down are not same for all individuals as for the universe. On the contrary, the roots of plants correspond to the heads of animals, if we are to make identity and diversity of organs depend upon their functions. Besides, what is it that holds together the fire and the earth, tending, as they do, in opposite directions? For they will be rent asunder, unless there is something to prevent it: while, if there is, it is this which is the soul and the cause of growth and nourishment.

416a 9. Some hold the nature of fire to be singly and solely the cause of nourishment and growth. For it would seem that fire is the only body or element which of itself is nourished and grows. Hence fire might be supposed to be the operative force, both in plants and animals. Whereas, though it is in a sense a contributory cause, it is not a cause absolutely: it is rather the soul which is so. For fire goes on growing to infinity, as long as there is fuel to be consumed, but in natural wholes there is always a limit or proportion which determines growth and size. But this belongs to the soul and not to fire, to principle rather than to matter.

416a 19. The nutritive faculty, capacity, of the soul being the same as the reproductive, it is necessary first to set out the distinguishing features of nutriment. For it is by the nutritive function that this faculty is separated off from the others. The common view is that contrary is nutriment to contrary; though

not in every case, but wherever each of two contraries is not only generated by, but derives growth from, the other. For many things come to be from each other, but not all of them are quantities: thus the sick man becomes well. But it is found that even the contraries supposed to derive growth from each other are not fed by one another in the same way: while water serves to feed fire, fire is not nutriment to water. It would seem, then, that it is in the simple bodies above all that of two contraries one is nutriment and the other is nourished. Yet here is a difficulty. It is said by the one side that like is nourished by, as well as derives its growth from, like; while the others, again, as we explained, hold that contrary is nourished by contrary, on the ground that like cannot be affected by like, while food undergoes change and is digested. Now change is always in the direction of the opposite, or of the intermediate state. Further, nutriment is acted upon by that which it nourishes, and not the latter by the former: just as the carpenter is not affected by his material, but on the contrary the material by the carpenter. The carpenter merely passes to activity from inaction. But it makes a difference whether by nutriment we mean the final, or the primary, form of what is added. If both are nutriment, the one as undigested, the other as digested, it will be possible to use the term 'nutriment' in conformity with both theories. For, in so far as it is undigested, contrary is nourished by contrary: and, in so far as it is digested, like by like. So that clearly both sides are in a manner partly right and partly wrong. But, since nothing is nourished unless it possesses life, that which is nourished must be the ensouled body as such: so that nutriment also is relative to the ensouled being which it nourishes: and this not incidentally merely.

416b 11. There is, however, a difference between nutritivity and conducivity to growth. In so far as the ensouled thing is quantitative, what is taken promotes growth; in so far as it is a definite individual and a substance, what is taken nourishes. For the ensouled thing preserves its substance and exists as long as it is nourished: and it is productive, not of that which is nourished, but of another individual like it. Its substance already exists, and nothing generates itself, it only maintains its existence. Hence the above-described principle of the soul is the capacity to preserve in existence that which possesses it in so far as it is a definite individual, while nutrition prepares it for activity.

TRANSLATION OF TEXT

Therefore it cannot live when deprived of nutriment. There are, then, these three things: that which is nourished, that with which it is nourished, and that which nourishes. The last of the three is the primary soul, that which is nourished is the body which has the soul, that wherewith it is nourished is nutriment. As, however, it is right to call things from the end they subserve, and the end here is reproduction of the species, the primary soul is that which is capable of reproducing the species. That with which the living thing is nourished may be understood in two ways, just as that with which one steers may mean the hand or the rudder; the former, the hand, both moving and being moved, the latter, the rudder, being simply moved. Now it is necessary that all food should be capable of digestion, and digestion is promoted by heat; this explains why every ensouled thing has warmth. This, then, is an outline of what nutriment is. It must be more clearly defined hereafter in the discussion devoted specially to it.

CHAPTER 5

416b 32. Now that these points have been determined, let us proceed to a general discussion of all perception. As above remarked, perception consists in being moved and acted upon, for it is held to be a kind of qualitative change. Some add that like is in fact acted upon by like. How far this is possible or impossible we have explained in the general discussion of action and being acted upon. The problem arises why there is no perception of the sense-organs themselves: that is, why they produce no perception apart from external objects, though the sense-organs contain fire, earth and the other elements, which are the objects of perception either in themselves or through their accidents. It is clear then that the faculty of sense-perception exists not in activity, but only in potentiality. Hence it must be here as with the fuel which does not burn of and in itself without something to make it burn; otherwise it would kindle itself and would have no need of the fire which is actually existent. Perceiving is spoken of in two ways: we use the terms 'hearing' and 'seeing' of that which has the capacity to hear and see, even though it be at the time asleep, just as we do of that which already actually hears and sees. And therefore 'perception', too, will be spoken of in two ways: it may mean either

potential or actual perception. Similarly with the object of perception: one will be potential, the other actual.

417a 14. Let us then first proceed on the assumption that to be acted upon or moved is identical with active operation. For movement is in fact active operation of some sort, though incomplete, as we have elsewhere explained. But in every case things are acted upon and moved by an agent in actual operation. It follows that in one sense what is acted upon is acted upon by what is like it, in another sense by what is unlike it, as we have explained. That is to say, while being acted upon it is unlike, after it has been acted upon it is like the agent.

417a 21. We must also draw a distinction in regard to the terms 'potentiality' and 'actuality': at present we are using them without qualification. For instance, we may use the term 'knower', first, in the sense in which we might speak of man as a knower because man is one of the genus of beings which are knowers and have knowledge; second, in the sense in which we at once call the man 'a knower' who has learnt, say, grammar. Now of these two men each possesses the capacity, but in a different way: the one because the genus to which he belongs, his matter, is potentially a knower; the other because he is capable, if he chose, of applying the knowledge he has acquired, provided there is nothing external to hinder. Whereas he who is at the moment exercising his knowledge is actually knowing and knows in the proper sense of the term: for example, he knows the A before him. Thus the first two are both potentially knowers: the first becomes a knower actually after he has undergone qualitative change through instruction and often after transition from the reverse condition; while in the latter case it is by another kind of transition that the man passes from the mere possession, without the exercise, of sense or grammar to the exercise of it.

417b 2. To suffer or be acted upon, too, is not a single thing. Sometimes it is a sort of destruction by the contrary, sometimes it is rather a preservation of what is potentially existent by what is actually existent and like it, so far as likeness holds of potentiality when compared with actuality. For it is by exercise of knowledge that the possessor of knowledge becomes such in actuality: and this either is no qualitative change (for the thing

develops into its own nature and actuality), or else is qualitative change of a different sort. Hence it is not right to say that that which understands undergoes change when it understands, any more than that the builder undergoes change when he builds. That, then, which works the change from potential existence to actuality in a thinking and intelligent being should properly receive a different name and not be called teaching: while that which learns and is brought from potential to actual knowledge by that which is in actuality and able to teach should either not be said to suffer or be acted upon at all, or else two modes of qualitative change should be assumed, one to the negative states and the other to the normal disposition and the true nature of a thing.

417b 16. In the perceptive subject the first change is due to the parent: once generated it possesses sense-perception in the same way as it possesses knowledge. And actual sense-perception corresponds to exercise of knowledge. There is this difference, however, that in the one case the sources of the activity are external: as, for instance, the objects of sight, hearing and the other senses. The reason is that actual perception is always of particulars, while knowledge is of universals: and these universals are, in a manner, in the soul itself. Hence it is in our power to think whenever we please, but perception is not similarly in our power: for the presence of the object of perception is necessary. It is much the same with the sciences which deal with objects of perception; and for the same reason, namely, objects of perception are particulars and are external.

417b 28. But we shall have a further opportunity of making this clear hereafter. For the present let us be content to have established that of the two uses of 'potentiality', the one according to which a boy might be called potentially a general, and the other according to which a man of full age might be so called, it is the latter which applies to that which can perceive. But as this distinction has no word to mark it, although the fact and the nature of the distinction have been established, we are compelled to use the terms to suffer or be acted upon and to be qualitatively changed as if they were the proper terms. Now, as has been explained, that which can perceive is potentially such as the perceptible object is in actuality. While it is being acted upon, it

is not yet similar, but, when once it has been acted upon, it is similar and has the same character as the sensible object.

CHAPTER 6

418a 7. In considering each separate sense we must first treat of their objects. 'Object of perception' is spoken of in three ways, of which we say that we perceive two in themselves, while the third is perceived *per accidens* or incidentally. Of these first two the one is the special object of a particular sense, the other an object common to all the senses. By a special object of a particular sense I mean that which cannot be perceived by any other sense and in respect to which deception is impossible; for example, sight is of colour, hearing of sound and taste of flavour, while touch no doubt has for its object several varieties. But at any rate each single sense judges of its proper objects and is not deceived as to the fact that there is a colour or a sound; though as to what or where the coloured object is or what or where the object is which produces the sound, mistake is possible. Such, then, are the special objects of the several senses. By common objects are meant movement, rest, number, figure, size: for these are not the special objects of any single sense, but are common to all. For example, a certain movement can be perceived by touch as well as by sight. What is meant by an incidental object of perception may be illustrated if we suppose that the white thing before you is Diares' son. You perceive Diares' son, but incidentally, for that which you perceive is incidental to the white thing. Hence you are not affected by the incidentally perceptible object as such. Of the objects which are perceived in themselves it is the objects special to the different senses which are properly perceptible: and it is to these that the essential character of each sense is naturally adapted.

CHAPTER 7

418a 26. The object, then, of sight is the visible: what is visible is colour and something besides which can be described, though it has no name. What we mean will best be made clear as we proceed. The visible, then, is colour. Now colour is that with which what is visible in itself is overlaid: and, when I say 'in itself', I do not mean what is visible by its definition, but what is

visible because it contains within itself the cause of visibility. But colour is universally capable of exciting change in the actually transparent; this being, in fact, the true nature of colour. Hence colour is not visible without light, but the colour of each object is always seen in light. And so we shall have first to explain what light is.

418b 4. There is, then, we assume, something transparent; and by this I mean that which, though visible, is not, properly speaking, visible in itself, but by reason of the colour of something else. Air, water and many solid bodies answer to this description. For they are not transparent *qua* air or *qua* water, but because there is a certain nature present in both of them which is present also in the eternal body on high. Light is the activity of this, the transparent *qua* transparent. But where the transparent is only potentially present, there darkness is actually. Light is a sort of colour of the transparent when made transparent in actuality by the agency of fire or something resembling the celestial body: for this body also has an attribute which is one and the same with that of fire. What the transparent is, and what light is, has now been stated: namely, that it is neither fire nor body generally nor an effluence from any body (for even then it would still be a sort of body), but the presence of fire or something fiery in the transparent. For it is impossible for two bodies to occupy the same place at the same time.

418b 18. Light is held to be contrary to darkness. But since darkness is the privation of this sort of disposition of the transparent, so plainly light is the presence of it. Thus Empedocles and others who propounded the same view are wrong when they represent light as moving in space and arriving at a given point of time between the earth and that which surrounds it without our perceiving its motion. For this contradicts not only the clear evidence of reason, but also the facts of observation: since, though a movement of light might elude observation within a short distance, that it would do so all the way from east to west is too much to assume.

418b 26. It is that which is colourless which is receptive of colour, as it is that which is soundless which is receptive of sound. And the transparent is colourless, and so is the invisible or the dimly visible, as dark is believed to be. Such is the

transparent medium, not indeed when it is in actuality, but when potentially transparent. For it is the same nature which is at one time darkness and at another time light. It is not everything visible which is visible in light, but only the proper colour of each thing. Some things, indeed, are not seen in daylight, though they produce perception in the dark: as, for example, the things of fiery and glittering appearance, for which there is no one distinguishing name, like fungus, horn, the heads, scales and eyes of fishes. But in no one of these cases is the proper colour seen. Why these objects are seen must be discussed elsewhere. At present this much is clear, that the object seen in light is colour, and this is why it is not seen without light. For what it is to be colour is, as we say, just this, that it is capable of exciting change in the operantly (actual) transparent medium: and the actuality of the transparent is light. There is clear evidence of this. If you lay the coloured object upon your eye, you will not see it. On the contrary, what the colour sets in motion is the transparent medium, say, the air, and by this, which is continuous, the sense-organ is stimulated. For it was a mistake in Democritus to suppose that if the intervening space became a void, even an ant would be distinctly seen, supposing there were one in the sky. This is impossible. For sight takes place through an affection of that which can perceive. Now it cannot be affected by that which is seen, the colour itself: therefore it can only be by the intervening medium: hence the existence of some medium is necessary. But if the intermediate space became a void, so far from being seen distinctly, an object would not be visible at all.

419a 22. We have explained the reason why colour must be seen in light. Fire is visible both in light and in darkness: and necessarily so, for it is owing to fire that the transparent becomes transparent. The same account holds for sound and odour. For no sound or scent produces sense-perception by contact with the sense-organ: it is the intervening medium which is moved by sound and odour and the respective sense-organs by the medium. But when the body which emits the sound or odour is placed on the sense-organ itself, it will not produce any perception. The same holds of touch and taste, although it appears to be otherwise. The reason for this will be seen hereafter. The medium for sounds is air, that for odour has no name. For there is assuredly a common quality in air and

water, and this quality, which is present in both, stands to the body which emits odour in the same relation as the transparent to colour. For animals that live in water also appear to have perception of smell. But man and the other land-animals which breathe are unable to smell without inhaling breath. The reason for this, too, must be reserved for future explanation.

CHAPTER 8

419b 4. Let us now begin by distinguishing certain facts about sound and hearing. There are two sorts of sound, one a sound which is operant (actual), the other potential sound. For some things we say have no sound, as sponge, wool; others, for example, bronze and all things solid and smooth, we say have sound, because they can emit sound, that is, they can produce actual sound between the sonorous body and the organ of hearing. When actual sound occurs it is always of something on something and in something, for it is a blow which produces it. Hence it is impossible that a sound should be produced by a single thing, for, as that which strikes is distinct from that which is struck, that which sounds sounds upon something. And a blow implies spatial motion. As we stated above, it is not the impact of any two things taken at random which constitutes sound. Wool, when struck, emits no sound at all, but bronze does, and so do all smooth and hollow things; bronze emits sound because it is smooth, while hollow things by reverberation produce a series of sounds after the first, that which is set in motion being unable to escape.

419b 18. Further, sound is heard in air and, though more faintly, in water. It is not the air or the water, however, which chiefly determines the production of sound: on the contrary, there must be solid bodies striking against one another and with the air: and this happens when the air after being struck resists the impact and is not dispersed. Hence the air must be struck quickly and forcibly if it is to give forth sound; for the movement of the striker must be too rapid to allow the air time to disperse: just as would be necessary if one aimed a blow at a heap of sand or a sandwhirl, while it was in rapid motion onwards.

419b 25. Echo is produced when the air is made to rebound backwards like a ball from some other air which has become a

single mass owing to its being within a cavity which confines it and prevents its dispersion. It seems likely that echo is always produced, but is not always distinctly audible: since surely the same thing happens with sound as with light. For light is always being reflected; else light would not be everywhere, but outside the spot where the sun's rays fall there would be darkness. But it is not always reflected in the same way as it is from water or bronze or any other smooth surface; I mean, it does not always produce the shadow by which we delimit the light.

419b 33. Void is rightly stated to be the indispensable condition of hearing. For the air is commonly believed to be a void, and it is the air which produces hearing, when being one and continuous it is set in motion. But, owing to its tendency to disperse, it gives out no sound unless that which is struck is smooth. In that case the air when struck is simultaneously reunited because of the unity of the surface; for a smooth body presents a single surface.

420a 3. That, then, which can produce sound is that which is capable of producing movement in a mass of air continuously one as far as the organ of hearing. Air is naturally one with the organ of hearing. And because the organ of hearing is in air, when the external air is set in motion the air within it moves. Hence it is not with every part that the animal hears, nor that the air passes through: for it is not everywhere that the part which is to be set in motion and be made to sound has a supply of air. Of itself, then, the air is a soundless thing because it is easily broken up. But whenever it is prevented from breaking up, its movement is sound. But the air within the ears has been lodged fast within walls to make it immovable, in order that it may perceive exactly all the varieties of auditory movement. This is why we hear in water also, because the water does not pass right up to the air which is naturally one with the ear, nor even into the ear at all, because of its convolutions. Should this happen, hearing is destroyed, as it is by an injury to the membrane of the tympanum, and as sight is by an injury to the eye-jelly. Further, we have indication whether we hear or not, according as there is or is not always a ringing sound in the ears, as in a horn: for the air imprisoned there is always moving with a proper motion of its own. But sound is something of external origin and is not private to the ear. And this is why it is

said that we hear by means of what is empty and resonant, because that by which we hear has air confined within it.

420a 19. Does that which is struck emit the sound or that which strikes? Is it not rather both, but each in a different way? For sound is motion of that which is capable of being moved in the same manner as things rebound from smooth surfaces when struck sharply against them. Thus, as above remarked, it is not everything which, when struck or striking, emits sound: supposing, for instance, a pin were to strike against a pin, there would be no sound. The thing struck must be of even surface, so that the air may rebound and vibrate in one mass.

420a 26. The varieties of resonant bodies are clearly distinguished by the sound they actually emit. For as without light colours are not seen, so without sound we cannot distinguish high and low or sharp and flat in pitch. These latter terms are used by analogy from tangible objects. For the sharp, that is, the high note, moves the sense much in a little time, while the flat or low note moves it little in much time. Not that what is sharp is quick, nor what is flat is slow, but it is in the one case the quickness, in the other the slowness, which makes the motion or sensation such as has been described. And it would seem that there is a certain analogy between the sharp/high and low/flat to the ear and the sharp and blunt to the touch. For that which is sharp, as it were, stabs, while the blunt, as it were, thrusts, because the one produces movement in a short, the other in a long, time, so that incidentally the one is quick, the other slow. Let this account of sound suffice.

420b 5. Voice is a certain kind of sound made by an ensouled being. Nothing without a soul is vocal, though it may by analogy be said to be vocal, as in the case of the pipe, the lyre and all other inanimate things that have pitch and tune and articulation: for these qualities, it would seem, the voice also possesses. But many animals have no voice: that is to say, all bloodless animals and, among animals that have blood, fishes. And this is what we might expect, since sound is a certain movement of air. Those fishes which are said to possess voice, such as those in the Achelöus, merely make a noise with their gills or some other such part. Voice is sound made by an animal, and not by any part of its body indifferently. But, as in every

case of sound there is something that strikes, something struck and a medium, which is air, it is reasonable that only creatures which inhale air should have voice. For here nature uses the air that is inhaled for two purposes, just as it uses the tongue for tasting and for speech, the former use, for tasting, being indispensable and therefore more widely found, while expression of thought is a means to well-being. Similarly nature uses the breath first as a necessary means to the maintenance of internal warmth (the reason for which shall be explained elsewhere) and, further, as a means of producing voice and so promoting well-being. The organ of respiration is the throat, and the part to which this part is subservient is the lung: for it is this organ, namely, the lung, which enables land animals to maintain a higher temperature than others. Respiration is also needed primarily for the region about the heart. Hence, as we draw breath, the air enters: and so the impact upon the windpipe, as it is called, of the air breathed is voice, the impact being due to the soul in these parts of the body. For, as we said before, it is not every sound made by an animal that is voice. Noise can be produced even with the tongue or as in coughing: but it is necessary for voice that that which strikes should have a soul and that a kind of imagination should be present. For voice is certainly a sound which has significance and is not like a cough, the noise of air respired: rather with this air the animal makes the air in the windpipe strike against the windpipe. An indication of this is the fact that we cannot use the voice while inhaling or exhaling breath, but only while we hold it in: for anyone who holds his breath uses the breath so held to produce motion. And it is evident why fishes are voiceless. It is because they have no throat. And they are without this part because they do not take in the air nor breathe in. Why this is so belongs to another enquiry.

CHAPTER 9

421a 7. Of smell and the object of smell it is less easy to speak definitely than of the senses above-mentioned: for the nature of smell is by no means so clear as is the nature of sound or of colour. The reason is that this sense in us is not exact, but inferior to that of many animals. In fact, man has a poor olfactory sense and perceives none of the objects of smell unless

they be painful or pleasant, which implies that the organ is wanting in accuracy. It is reasonable to suppose that animals with hard eyes perceive colour in the same vague way and do not distinguish the varieties of colour except in so far as they do, or do not, inspire fear. And this is the way in which mankind perceive smells. For it would seem that, while there is an analogy to taste and the varieties of flavour answer to the varieties of smell, our sense of taste is more exact because it is a modification of touch and the sense of touch is the most exact of man's senses. In the other senses man is inferior to many of the animals, but in delicacy of touch he is far superior to the rest. And to this he owes his superior intelligence. This may be seen from the fact that it is this organ of sense and nothing else which makes all the difference in the human race between the natural endowments of man and man. For hard-skinned men are dull of intellect, while those who are soft-skinned are gifted.

421a 26. As with flavours, so with smells: some are sweet, some bitter. (But in some objects smell and flavour correspond; for example, they have sweet smell and sweet flavour: in other things the opposite in the case.) Similarly, too, a smell may be pungent, bitter, acid or oily. But because, as we said above, smells are not as clearly distinct as the corresponding flavours, it is from these latter that smells have taken their names, in virtue of a resemblance in the things. Thus the smell of saffron and honey is sweet, while the smell of thyme and the like is pungent; and so in all the other cases. Again, smell corresponds to hearing and to each of the other senses in that, as hearing is of the audible and inaudible, and sight of the visible and invisible, so smell is of the odorous and inodorous. By inodorous may be meant either that which is wholly incapable of having odour or that which has a slight or faint odour. The term tasteless involves a similar ambiguity.

421b 9. Further, smell also operates through a medium, namely, air or water. For water animals, too, whether they are, or are not, possessed of blood, seem to perceive odour as much as the creatures in the air: since some of them also come from a great distance to seek their food, guided by the scent.

421b 13. Hence there is an obvious difficulty, if the process of

smell is everywhere the same, and yet man smells when inhaling but does not smell when instead of inhaling he is exhaling or holding his breath, no matter whether the object be distant or near, or even if it be placed on the inside of the nostril. The inability to perceive what is placed immediately on the sense-organ man shares with all animals: what is peculiar to him is that he cannot smell without inhaling. This is made plain by experiment. Consequently bloodless animals, since they do not inhale, might be thought to have a distinct sense other than those commonly recognized. But, we reply, that is impossible, since it is smell which they perceive. For perception of odour, be it fragrant or foul, constitutes smelling. Moreover, it is found that these bloodless animals are destroyed by the same powerful odours as man, such as asphalt, brimstone and the like. It follows, then, that they do smell, but not by inhaling breath.

421b 26. It would seem, again, that in man the organ of this sense differs from that of the other animals, as his eyes differ from those of hard-eyed animals. Man's eyes have, in the eyelids, a sort of screen or sheath and without moving or opening them he cannot see: while the hard-eyed animals have nothing of the kind, but at once see whatever is taking place in the transparent medium. So, too, it seems the organ of smell in some animals is unenclosed, just as is the eye, but in those which take in the air it has a curtain, which is removed in the process of inhaling, by dilatation of the veins and passages. And this is the reason why animals which inhale cannot smell in the water. For it is necessary for them to take in breath before smelling and this they cannot do in the water. Smell is of the dry, as flavour is of that which is moist, and the organ of smell is potentially dry also.

CHAPTER 10

422a 8. The object of taste is a kind of tangible object. And this is the reason why it is not perceived through a foreign body as medium: for touch employs no such medium either. The body, too, in which the flavour resides, the proper object of taste, has the moist, which is something tangible, for its matter. Hence, even if we lived in water, we should still perceive anything sweet thrown into the water, but our perception

would not have come through the medium, but by the mixture of sweetness with the fluid, as is the case with what we drink. But it is not in this way, namely, by admixture, that colour is perceived, nor yet by emanations. Nothing, then, here corresponds to the medium; but to colour, which is the object of sight, corresponds the flavour, which is the object of taste. But nothing produces perception of flavour in the absence of moisture, but either actually or potentially the producing agent must have liquid in it: salt, for instance, for that is easily dissolved and acts as dissolvent upon the tongue.

422a 20. Again, sight is of the invisible as well as the visible (for darkness is invisible and this, too, sight discerns as well as light) and, further, of that which is exceedingly bright, which is likewise invisible, though in a different way from darkness. Similarly hearing has to do with sound and silence, the former being audible, the latter inaudible and, further, with loud sound, to which it is related as vision is to brightness, a loud and a violent sound being in a manner just as inaudible as a faint sound. The term 'invisible', be it noted, is applied not only to that which it is wholly impossible to see, which corresponds to other cases of the impossible, but also when a thing has imperfectly or not at all its natural properties, parallel to the footless and the kernel-less. So, too, taste has for object not only that which can be tasted, but also the tasteless, by which we mean that which has little flavour or hardly any at all, or a flavour destructive of taste. Now in flavour the primary distinction is supposed to be between the drinkable and the undrinkable. Both are taste of a sort, but the latter is bad or destructive of taste, while the former is naturally adapted to it. The drinkable is a common object of touch and of taste. But, since the object of taste is moist, the sense-organ which perceives it must be neither actually moist nor yet incapable of becoming moist. For taste is acted upon by the object of taste as such. The organ of taste, then, which needs to be moistened, must have the capacity of absorbing moisture without being dissolved, while at the same time it must not be actually moist. An indication of this is the fact that the tongue has no perception when either very dry or very moist. In the latter case the contact is with the moisture originally in the tongue, just as when a man first makes trial of a strong flavour and then tastes some other flavour; or as with the

sick, to whom all things appear bitter because they perceive them with their tongue full of bitter moisture.

422b 10. As with the colours, so with the species of flavour, there are, first, simple flavours, which are opposites, the sweet and the bitter; next to these on one side the succulent, on the other salt; and, third, intermediate between these, the pungent, the rough, the astringent and the acid. These seem to be practically all the varieties of flavour. Consequently, whilst that which can taste has potentially the qualities just described, the object of taste converts the potentiality into actuality.

CHAPTER 11

422b 17. The same account may be given of touch and the tangible. If touch is not a single sense but includes more senses than one, there must be a plurality of tangible objects also. It is a question whether touch is several senses or only one. What, moreover, is the sense-organ for touch? Is it the flesh or what is analogous to this in creatures that have not flesh? Or is flesh, on the contrary, the medium, while the primary sense-organ is something internal? We may argue thus: every sense seems to deal with a single pair of opposites, sight with white and black, hearing with high and low pitch, taste with bitter and sweet; but under the tangible are included several pairs of opposites, hot and cold, dry and moist, hard and soft, and the like. A partial solution of this difficulty lies in the consideration that the other senses also apprehend more than one pair of opposites. Thus in vocal sound there is not only high and low pitch, but also loudness and faintness, smoothness and roughness, of voice and so on. In regard to colour also there are other similar varieties. But what the one thing is which is the subject for touch as sound is for hearing is not clear.

422b 34. But is the sense-organ for touch internal or is the flesh the immediate organ? No inference can be drawn, seemingly, from the fact that perception occurs simultaneously with contact. For even under present conditions, if a sort of membrane were constructed and stretched over the flesh, this would immediately on contact transmit the sensation as before. And yet it is clear that the sense-organ is not in this membrane; although, if by growth it became united to the flesh, the

sensation would be transmitted even more quickly. Hence it appears that the part of the body in question, that is, the flesh, is related to us as the air would be if it were united to us all round by natural growth. We should then have thought we were perceiving sound, colour and smell by one and the same instrument: in fact, sight, hearing and smell would have seemed to us in a manner to constitute a single sense. But as it is, owing to the media, by which the various motions are transmitted, being separated from us, the difference of the organs of these three senses is manifest. But in regard to touch this point is at present obscure.

423a 12. In fact, the ensouled body cannot consist of air or water singly, it must be something solid. The only alternative is that it should be a compound of earth and of these elements, as flesh and what is analogous to flesh tend to be. Consequently the body must be the naturally cohering medium for the faculty of touch, through which the plurality of perceptions is communicated. That they are a plurality is made clear by touch in the case of the tongue, for the tongue perceives all tangible objects, and that at the same part at which it perceives flavour. Now, if the rest of the flesh also had perception of flavour, taste and touch would have seemed to be one and the same sense: whereas they are really two, because they are not interchangeable.

423a 22. Here a question arises. All body has depth, this being the third dimension, and, if between two bodies a third body is interposed, the two cannot touch one another. Now that which is moist is not independent of body, nor is that which is wet: if it is not itself water, it must contain water. But when bodies touch one another in the water, since their exterior surfaces are not dry, there must be water between them, the water with which their extremities are flooded. If, then, all this be true, no one thing can possibly touch another in the water, nor yet in the air: for the air stands to the objects in the air as water to the things in water, but this fact we are more apt to overlook, just as aquatic animals fail to notice that the things which touch one another in the water have wet surfaces. The question then arises: is the mode of perception uniform for all objects or does it differ for different objects? According to the prevalent view, taste and touch operate by direct contact, while the other senses

operate at a distance. But this view is incorrect. On the contrary, we perceive the hard and the soft also mediately, just as much as we do the resonant, the visible, the odorous. But the latter are perceived at a distance, the former close at hand: and this is why the fact escapes us, since we really perceive all objects through a medium, though in touch and taste we fail to notice this. And yet, as we mentioned above, even if we perceived all objects of touch through a membrane without being aware of its interference, we should be just in the same position as we are now with regard to objects in the water or in the air: for, as it is, we suppose that we are touching the objects themselves and that there is no intervening medium. But there is this difference between the tangible on the one hand and visible and resonant things on the other: the latter we perceive because the medium acts in a certain way upon us, while tangible objects we perceive not by any action upon us of the medium, but concurrently with it, like the man who is struck through his shield. It is not that the shield was first struck and then passed on the blow, but, as it happened, both were struck simultaneously. And, generally, it would seem that the flesh and the tongue are related to their sense-organ as are air and water to the organs of sight, hearing and smell respectively. But neither in the one case nor in the other would perception follow on contact with the sense-organ; for instance, if a body that is white were placed on the outer surface of the eye: which shows that the instrument that perceives the tangible is within. We should then get the same result as in the case of the other senses. What is placed on the sense-organ we do not perceive: what is placed on the flesh we do perceive: therefore flesh is the medium of touch.

423b 27. It is, then, the distinctive qualities of body as body which are the objects of touch: I mean those qualities which determine the elements, hot or cold, dry or moist, of which we have previously given an account in our discussion of the elements. And their sense-organ, the tactile organ, that is, in which the sense called touch primarily resides, is the part which has potentially the qualities of the tangible object. For perceiving is a form of being acted upon: so that when the object makes that part in actuality like itself it does so because that part is potentially like it. Hence it is that we do not perceive anything which is equally hot or cold, hard or soft, as we are, but only

TRANSLATION OF TEXT

the extremes of these qualities: which implies that the sense is a kind of mean between the opposites that characterize the objects of perception. This is why it is able to judge objects of perception. For what is 'in the middle' is fitted to judge; in relation to either extreme it can put itself in the place of the other. And, as that which is to perceive both white and black must to begin with be actually neither, though potentially both, and similarly for the other senses also, so in the case of touch that which is to perceive must be neither hot nor cold. Further, sight is in a manner, as we saw, of the invisible as well as the visible, and in the same way the remaining senses deal with opposites. So, too, touch is of the tangible and the intangible: where by 'intangible' is meant, first, that which has the distinguishing quality of things tangible in quite a faint degree, as is the case with the air; and, second, tangibles which are in excess, such as those which are positively destructive. Each of the senses, then, has now been described in outline.

CHAPTER 12

424a 17. In regard to all sense-perception generally we must understand that a sense (sense-organ) is that which is able to receive perceptible forms of things apart from their matter, as wax receives the imprint of the signet ring apart from the iron or gold of which it is made: it takes the imprint which is of gold or bronze but not *qua* gold or bronze. And, in similar fashion, in each case, the sense (sense-organ) is acted upon by that which possesses colour, flavour or sound, not in so far as each of these things is called a particular thing, but in so far as it is a certain sort of thing and in accordance with its account. The primary sense-organ is that in which such a capacity resides, the capacity to receive perceptible forms. Thus the organ is one and the same as the capacity, but what it is for them to be such is different. For that which perceives must be an extended magnitude. What it is to be able to perceive, however, is not an extended magnitude, nor is the sense: they are rather a certain ratio and capacity of that thing. From this it is evident why excesses in the objects of perception destroy the sense-organs. For if the movement is too violent for the sense-organ, the ratio (and this as we saw, constitutes the sense), is destroyed, just as the harmony and the pitch of the lyre suffer by too violent jangling of the

strings. It is evident, again, why plants do not perceive, although they have one part of soul and are in some degree affected by the things themselves which are tangible: for example, they become cold and hot. The reason is that they have in them no mean, no principle capable of receiving the forms of perceptible objects without their matter, but on the contrary, when they are acted upon, the matter acts upon them as well. It might be asked whether what is unable to smell would be in any way acted upon by an odour, or that which is incapable of seeing by a colour, and so for the other cases. But, if the object of smell is odour, the effect it produces, if it produces an effect at all, is smelling. Therefore none of the things that are unable to smell can be acted upon by odour, and the same is true of the other cases: nor can any of the things that can perceive be so affected, except where they individually possess the particular sense required. This may also be shown as follows. Light and darkness do not act upon bodies at all; neither does sound or odour: it is the things which possess them that act. Thus it is the air accompanying the thunderbolt which splits the timber. But, it may be said, things tangible and flavours do so act: else by what agency are soulless things acted upon or changed? Shall we, then, conclude that the objects of the other senses also act on such bodies? Is it not rather the case that not every body can be affected by smell and sound, and that the bodies which are so affected are indeterminate and shifting; for example, air? For odour in the air implies that the air has been acted upon in some way. What, then, is smelling, besides a sort of being affected or being acted upon? Or shall we say that smelling is also perceiving, whereas the air, after it has been acted upon, so far from perceiving, at once becomes itself perceptible to sense?

DE ANIMA: BOOK III

CHAPTER 1

424b 22. That there is no other sense distinct from the five, by which I mean sight, hearing, smell, taste, touch, anyone may convince himself on the following grounds. Let us assume that, as a matter of fact, we have perception of every object for which touch is the appropriate sense, all qualities of the tangible, as such, being perceptible to us through touch. Let us further assume that, when any sense is lacking to us, an organ of sense must also be lacking; and further, that whatever we perceive by immediate contact is perceptible by touch, a sense which we do possess, while whatever we perceive mediately and not by immediate contact is perceptible by means of the elements, namely, air and water. And here are implied two cases. Suppose, first, we have perception by one and the same medium of two several things different in kind from one another, then whoever possesses the appropriate sense-organ must be percipient of both: as, for example, if the sense-organ consists of air and air is also the medium of both sound and colour. Next suppose several media to transmit the same object, as both air and water transmit colour, both being transparent, then he who possesses one of these alone will perceive whatever is perceptible through both media. Now, of the elements, air and water are the only two of which the sense-organs are composed. For the eye-jelly is of water, and the interior of the ear is of air, and the organ of smell is of one or the other, while fire, if present anywhere, enters into all, since nothing is able to perceive without warmth. Earth, again, belongs to none of the sense-organs, or, at most, is a constituent peculiar to touch. It follows, then, that outside

water and air there is no sense-organ. Now sense-organs composed of air and water certain animals do, in fact, possess. We may infer, then, that all the senses are possessed by those animals which are fully developed and are not maimed: even the mole is found to have eyes beneath its skin. And thus, unless there exists some unknown body or some property different from any possessed by any of the bodies within our experience, there can be no sixth sense which we lack.

425a 14. Nor, again, can there be any special sense-organ for the common objects, which we perceive incidentally by every sense; for example, movement, rest, figure, magnitude, number, unity. For all of these we perceive by movement. Thus it is by movement that we perceive magnitude, and consequently figure, figure being one variety of magnitude; while that which is at rest we perceive by the fact that it is not moved. Number we perceive by the negation of continuity and by the special objects also: for each sense has a single object. Clearly, then, it is impossible that there should be a special sense for any one of these; for example, movement: for in that case we should perceive them in the same way as we now perceive sweetness by sight (and this we do because we have a perception of both, as a result of which we actually recognize the two simultaneously when they occur in conjunction). Otherwise we should never have more than an incidental perception of them; as of Cleon's son we perceive not that he is Cleon's son, but that he is a white object, and the fact of his being Cleon's son is incidental to the white. But of the common objects we have already a common sense which is not incidental to them, so that there cannot be a special sense for them. For, if there were, we should never perceive them otherwise than in the way in which we said we saw Cleon's son.

425a 30. But the various senses incidentally perceive each other's proper objects, not as so many separate senses, but as forming a unity when there is concurrent perception relating to the same object; as, for instance, when we perceive that bile is bitter and yellow. For it is certainly not the part of any other sense to declare that both objects are one and the same. Hence you are sometimes deceived and, on observing something yellow, fancy it to be bile.

425b 4. But, it might be asked, why have we several senses,

instead of only one? I answer, it is in order that we may not be so likely to overlook the common objects, such as movement, magnitude, number, which accompany the special objects of sense. For, if sight had been our only sense and white its object, we should have been more apt to overlook the common objects and to confuse all objects of sense, because colour and magnitude, for instance, must always go together. As it is, the fact that the common objects are found in the object of another sense also shows that they are severally distinct.

CHAPTER 2

425b 12. Inasmuch as we perceive that we see and hear, it must either be by sight or by some other sense that the percipient perceives that he sees. But, it may be urged, the same sense which perceives sight will also perceive the colour which is the object of sight. So that either there will be two senses to perceive the same thing or the one sense, sight, will perceive itself. Further, if the sense concerned with sight were really a distinct sense, either the series would go on to infinity or some one of the series of senses would perceive itself. Therefore it will be better to admit this of the first in the series. Here, however, there is a difficulty. Assuming that to perceive by sight is to see and that it is colour or that which possesses colour which is seen, it may be argued that, if you are to see that which sees, that which in the first instance sees, the primary visual organ, will actually have colour. Clearly, then, to perceive by sight does not always mean one and the same thing. For, even when we do not see, it is nevertheless by sight that we discern both darkness and light, though not in the same manner. Further, that which sees is in a manner coloured. For the sense-organ is in every case receptive of the perceptible object without its matter. And this is why the perceptions and imaginings remain in the sense-organs even when the perceptible objects are withdrawn.

425b 26. Now the activity of the perceptible object is one and the same with that of the sense, though, what it is for them to be such is not the same. I mean, for example, actual sound and actual hearing are the same: for it is possible to have hearing and yet not hear; again, that which is resonant is not always

sounding. But when that which is capable of hearing actively hears and that which is capable of sounding sounds, the actual hearing and the actual sound occur simultaneously, and we might, if we pleased, call them listening and sounding respectively. If, then, movement, action and being affected reside in that which is acted upon, then of necessity it is in that which has the potentiality of hearing that there is actual sound and there is actual hearing. For the activity of agent and movement comes into play in the patient; and this is why that which produces movement need not itself be moved. The activity of that which can sound, then, is sound or sounding, and the activity of that which can hear is hearing or listening, hearing and sound being in two ways. The same account may be given of the other senses and objects of perception. For, just as acting and being acted upon are in the subject acted upon and not in the agent, so also the activity of the perceptible object and that of the perceptive faculty will be in the percipient subject. But in some cases both activities have a name; for example, sounding and listening: in other cases one or the other has no name. Thus, while the activity of sight is called seeing, that of colour has no name; and, while the activity of the taste-faculty is called tasting, that of the flavour has no name. Now, as the activity of the object of perception and that of the faculty of perception are one and the same, although what it is for them to be such is different, hearing and sound thus understood as operant must simultaneously cease to be or simultaneously continue in being, and so also with flavour and taste, and similarly with the other cases: but when they are understood as potentialities, there is no such necessity. On this point the earlier natural philosophers were in error, when they supposed that without seeing there was neither white nor black, and without tasting no flavour. Their statement is in one sense true, in another false. For the terms 'perception' and 'perceptible thing' are spoken of in two ways. When they mean the actual perception and the actual perceptible thing, the statement holds good; when they mean potential perception and potential perceptible thing, this is not the case. But our predecessors spoke in one way of things that are spoken of in more than one way.

426a 27. If, then, concord consists in a species of vocal sound, and if vocal sound and hearing are in one aspect one and the

same (though in another aspect not the same), and if concord is a ratio, it follows that hearing must also be a species of ratio. And this is the reason why hearing is destroyed by either excess, whether of high pitch or of low. And similarly, in the case of flavours, excess destroys the taste, and in colours excessive brightness or darkness destroys the sight, and so with smell, whether the excessive odour be agreeable or pungent. All this implies that the sense is a kind of ratio. Hence things are pleasurable when they are brought pure and unmixed into a ratio; for example, the high-pitched, the sweet, the salt: in that case, I say, they are pleasurable. But, speaking generally, that in which ingredients are blended, a concord, is pleasurable in a higher degree, accords more pleasure to the ear than high pitch or low pitch alone, and to touch that which admits of being still further heated or cooled. The ratio constitutes the sense, while objects in excess dissolve or destroy it.

426b 8. Now each sense is concerned with its own perceptible subject, being present in the organ, *qua* sense-organ, and judges the specific differences of its own perceptible subject. Thus sight pronounces upon white and black, taste upon sweet and bitter, and so with the rest. But since we judge white and sweet and each of the objects of perception by reference to each other, what in fact is it by means of which we perceive the difference between them? It must be by perception, for they are objects of perception. And thus it is clear that the flesh is not the ultimate organ of sense; for, if it were, it would be necessary that that which judges should judge by contact with the object. Nor indeed can we by separate means judge that sweet is different from white, but both objects must be clearly presented to some single thing. For, if we could, then the mere fact of my perceiving one thing and your perceiving another would make it clear that the two things were different. But a single thing is required to propound them different, for sweet and white are different. It is one and the same thing, then, which so propounds. Hence, as it propounds, so it also thinks and perceives. Clearly, then, it is not possible by separate means to pronounce judgement upon things which are separate: nor yet at separate times, as the following considerations show. For, as it is one single thing which propounds that good and bad are different, so when it propounds 'A is different from B' it also propounds 'B is

different from A' (and in this case the 'when' is not accidental; I mean, accidental in the sense in which I may now say 'Such and such things are different' without saying that they are different now. On the contrary, it propounds now and propounds that A and B are different now). That which judges judges, then, instantaneously and hence as an undivided unit in an undivided time. But, again, it is impossible for the same thing, in so far as indivisible and affected in indivisible time, to be moved at the same instant with contrary motions. For, if the object be sweet, it moves perception or thought in such and such a way, but what is bitter moves it in a contrary way, and what is white in a different way.

427a 2. Is, then, that which judges at the same time both numerically indivisible and undivided, although divided in what it is for it to be such? It is in one way that which is divided which perceives divided objects: in another way it is *qua* indivisible that the divided perceives them. That is to say, in what it is to be such it is divisible, yet numerically and in place it is indivisible. Or is this impossible? For the same indivisible thing, though in potentiality each of two opposites, is not so in what it is to be such, but when in activity it becomes divided: it is impossible that it should be at the same time both white and black, and hence impossible that it should receive at the same time the forms of white and black, if reception of forms constitutes perception and thought. Rather is the case parallel to that of the point, as some describe it, which is both indivisible and divisible in so far as it is regarded as one and two. Well, then, in so far as that which judges is indivisible, it is one and judges instantaneously; but in so far as it is divisible, it is not one, for it uses the same point at the same time twice. So far as it treats the boundary point as two, it passes judgement on two separate things and in a manner is separated into two; so far as it treats the boundary point as one, it passes judgement on one thing, and that instantaneously. So much, then, for the principle in virtue of which we call the animal capable of perceiving.

CHAPTER 3

427a 17. There are two distinguishing characteristics by which the soul is principally defined: first, movement from place to

place and, second, thinking, understanding and perceiving. Both thinking and understanding are commonly regarded as a kind of perception, since the soul in both of these judges and recognizes something existent. The ancients, at any rate, identify understanding and perceiving: thus, in the words of Empedocles, 'Wisdom for mankind is increased according to that which is present to them': and, again, 'Whence they have also continually a shifting succession of thoughts'. Homer's meaning, too, is the same when he says: 'Such is the mind of men.' In fact, all of them conceive thought to be corporeal like perceiving and hold that we understand, as well as perceive, like by like: as we explained at the outset of the discussion. They ought, however, at the same time to have discussed error, a state which is peculiarly characteristic of animal life and in which the soul continues the greater part of its time. It follows from their premises that either all appearances must be true, as some affirm, or contact with what is unlike must constitute error; this being the converse of the position that like is known by like. But, as the knowledge of contraries is one and the same, so, too, it would seem, is error with respect to contraries one and the same.

427b 6. Now it is clear that perceiving and understanding are not the same thing. For all animals share in the one, but only a few in the other. And when we come to thinking, which includes right thinking and wrong thinking, right thinking being understanding, knowledge and true belief, and wrong thinking the opposites of these, neither is this identical with perception. For perception of the objects of the special senses is always true and is found in all animals, while thinking may be false as well as true and is found in none which have not reason also. Imagination, in fact, is something different both from perception and from thought, and is never found by itself apart from perception any more than is supposal apart from imagination. Clearly imagination is not the same kind of thinking as supposal. For the former is in our own power, whenever we please: for we can represent an object before our eyes, as do those who range things under mnemonic headings and picture them to themselves. But believing is not in our power, for the belief that we hold must be either false or true. Moreover, when we believe that something is terrible or alarming, we at once feel the

corresponding emotion, and so, too, with what is reassuring. But when we are under the influence of imagination we are no more affected than if we saw in a picture the objects which inspire terror or confidence. There are also different forms even of supposal; knowledge, belief, understanding and their opposites. But the difference between these must be reserved for another discussion.

427b 27. To turn to thought: since it is different from sense-perception and seems to include imagination on the one hand and supposal on the other, we must determine the nature of imagination before we proceed to discuss supposal. If, then, imagination is that in virtue of which we say that a phantasm presents itself to us, and if we exclude the metaphorical use of the term, it is one of the faculties or dispositions in virtue of which we judge, and judge truly or falsely. Such dispositions are perception, belief, knowledge, intellect. It is clearly not perception, for the following reasons. Perception is either a faculty like sight or an activity like seeing. But we may have a phantasm even when neither the one nor the other is present: for example, appearances in dreams. Again, perception is always present, but not so imagination. Besides, the identity of the two in activity would involve the possibility that all the beasts have imagination. But this apparently is not the case; for example, the ant, the bee do, but the grub does not possess it. Moreover, perceptions are always true, but imaginings prove for the most part false. Further it is not when we direct our energies closely to the perceptible object that we say that this object appears to us to be a man, but rather when we do not distinctly perceive it (then it may be either true or false). And, as we said before, sights present themselves even if we have our eyes closed.

428a 16. Neither, again, can imagination be ranked with things like knowledge or intellect, which are always correct: it may also be false. It remains, then, to consider whether it be belief, as belief may be true or false. But belief is attended by conviction, for it is impossible to hold beliefs without being convinced of them: but no beast is ever convinced, though many have imagination. Further, every belief implies conviction, conviction implies that we have been persuaded, and persuasion implies reason. Among beasts, however, though some have imagination, none have reason. It is evident, then,

that imagination is neither belief joined with perception nor belief through perception, nor yet a complex of belief and perception, both on these grounds and because on that view nothing else is the object of belief but that which is the object of perception: I mean, it will be the complex of the belief in the white and the perception of white, not surely of the belief in the good and the perception of white, which alone would constitute imagination. To be subject to an appearance, then, will be on this supposition to believe, not incidentally, that which we perceive. But there are false appearances concerning things of which we hold at the same time a true supposition. For example, the sun appears only a foot in diameter, but we believe that it is larger than the inhabited world: on this view [i.e. if imagination be belief], therefore, either, without any alteration in the thing and without any lapse of memory on our part or conversion by argument, we have abandoned the true belief which we had about it; or else, if we still retain it, the same belief must be both true and false. It could have proved false only in the event of the facts having changed without our observing it. It is not, then, either one of the two, belief and perception, singly, or a combination of the two, which constitutes imagination.

428b 10. Now when one thing is moved, something else can be moved by it. And imagination is thought to be a kind of movement and not to arise apart from sense-perception, but only in percipient beings and with the objects of perception for its objects. Movement, again, may be produced by the activity of perception, and such movement must resemble the perception which caused it. From all this it follows that this kind of movement cannot arise apart from sense perception nor be found anywhere except in percipient beings: and in virtue of this movement it is possible for its possessor to do and experience many things: and it may be both true and false. The reasons for the last conclusion are as follows. Perception of the objects of the special senses is true, or subject to the minimum of error. Next comes the perception that what is incidental to the objects of perception *is* incidental to them: and at this point error may come in. As to the whiteness of an object, there is no mistake, but there may be a mistake as to whether the white object is this thing or something else. Third, there is perception

of the common objects, that is, the concomitants of the things to which the special objects belong: I mean, for example, movement and magnitude. And it is concerning them that sense-perception is most apt to be deceived. But the movement which is the result of the activity of sense-perception will be different according as it arises from one or other of these three kinds of perception. The first kind, so long as the perception is present, is true; the other kinds may be false, whether the perception is present or absent, and especially when the object perceived is a long way off. If then, imagination possesses no other characteristics than the aforesaid, and if it is what it has been described to be, imagination will be a movement generated by the activity of sense perception. And, since sight is the paradigm for sense perception, imagination has derived even its name (*φαντασία*) from light (*φάος*), because without light one cannot see. Again, because imaginations remain in us and resemble the corresponding perceptions, animals perform many actions under their influence; some, that is, the beasts, through not having intellect, and others, that is, men, because intellect is sometimes obscured by passion or disease or sleep. Let this account of what imagination is and why it is, suffice.

CHAPTER 4

429a 10. As to the part of the soul by which it knows and understands, whether such part be separable spatially, or not separable spatially, but only in account, we have to consider what is its distinctive character and how thinking comes about. Now, if thinking is analogous to perceiving, it will consist in a being acted upon by the object of thought or in something else of this kind. This part of the soul, then, must be impassive, but receptive of the form and potentially like this form, though not identical with it: and, as that which can perceive is to perceptible objects, so must intellect be related to intelligible objects. The intellect, then, since it thinks all things, must needs, in the words of Anaxagoras, be unmixed with any, if it is to rule, that is, to know. For the presence of what is foreign to its nature hinders and obstructs it; hence it has no other nature than this, that it is a capacity. Thus, then, the part of the soul which we call intellect (and by intellect I mean that whereby the soul thinks and supposes) is not anything at all actually before it

thinks. Hence, too, we cannot reasonably conceive it to be mixed with the body: for in that case it would acquire some particular quality, cold or heat, or would even have some organ, as the perceptive faculty has. But as a matter of fact it has none. Therefore it has been well said that the soul is a place of forms except that this is not true of the whole soul, but only of that which can think, and again this is the forms not actually but potentially. But that the impassivity of the faculty of sense-perception is different from that of the intellect is clear if we look at the sense-organs and at the sense. The sense loses its power to perceive, if the object of perception has been too intense: thus it cannot hear sound after very loud noises, and after too powerful colours and odours it can neither see nor smell. But the intellect, when it has been thinking on an object of intense thought, is not less, but even more able to think of inferior objects. For the perceptive faculty is not independent of body, whereas intellect is separable. But when the intellect has thus become each thing in the sense in which one who actually knows is said to be (which happens so soon as he can exercise his capacity by himself), even then it is still in one sense but a capacity: not, however, a capacity in the same sense as before it learned or discovered. Then it is capable of (actually) thinking itself.

429b 10. Now since a magnitude is not the same as what it is to be a magnitude, nor water the same as what it is to be water (and so also of many other things, though not of all, the thing and what it is to be that sort of thing in some cases is the same), it (the intellect/one)* judges what it is to be flesh and flesh itself either by the means of some other thing or by the means of some one thing in another way. For flesh is never found apart from matter, but like 'snub-nosed' it is a *this* in a *this*. It is, then, with the faculty of sense-perception that it (the intellect/one) discriminates heat and cold and all those things which combined in a certain ratio constitute flesh. But it is with another faculty, either separate from sense-perception or related to it as a bent

* I have used both 'the intellect' and 'one' here in the light of an ambiguity in the text. Malcolm Lowe argues that Aristotle is referring to the mind (intellect) here but initially translates as 'it/one' (cf. Lowe: 'Aristotle on kinds of thinking', section II). In the passage 431b 2ff., I have taken the intellect to be the subject of 'judges', following Lowe's argument.

line when straightened out is related to its former self, that it (the intellect/one) judges what it is to be flesh. Again, when we come to the abstractions of mathematics, the straight answers to the 'snub-nosed', being never found apart from extension. But 'what it is to be what it was' of that which is straight, supposing that the straight and what it is to be straight are different, is something distinct. We may assume it to be duality. It is, then, with something else or with the same thing in a different way that it (the intellect/one) judges duality. In general, then, to the separation of things from their matter there corresponds a difference in the operations of the intellect.

429b 22. The question might arise: assuming the intellect is something simple and unaffected and, in the words of Anaxagoras, has nothing in common with anything else, how will it think, if to think is to be acted upon? For it is in so far as two things have something in common that the one of them is supposed to act and the other to be acted upon. Again, can the intellect itself be its own object? For then either its other objects will have intellect in them, if it is not through something else, but in itself, that the intellect is capable of being thought, and if to be so capable is everywhere to be identical in form: or else the intellect will have some ingredient in its composition which makes it, like the rest, an object of thought. Or shall we recall our old distinction between two uses of the phrase 'to be acted upon in virtue of a common element', and say that the intellect is in a manner potentially all objects of thought, but is actually nothing until it thinks: potentially in the same way as in the case of a tablet which has nothing actually written upon it yet the writing exists potentially? This is exactly the case with the intellect. Moreover, the intellect itself is an object of thought, just as its objects are. For where the objects are immaterial that which thinks and that which is thought are identical. Contemplative knowledge and its object are in that way the same. (We must, however, enquire why it does not always think.) On the other hand, in things having matter each of the objects of thought is present potentially. Consequently material objects will not have intellect in them, for the intellect is the capacity of becoming such objects without their matter; whereas the intellect will have what can be thought in it.

TRANSLATION OF TEXT

CHAPTER 5

430a 10. But since, as in the whole of nature, to something which serves as matter for each kind of thing (and this is potentially all the members of the kind) there is also something else which is the cause and that which produces because it makes them all, the two being related as art to its material, of necessity these differences must be found also in the soul. And to the one intellect, which answers to this description because it becomes all things, corresponds the other intellect because it makes all things, as a sort of disposition such as light does. For in a manner light, too, makes colours which are potential into actual colours. And it is this intellect [i.e. the productive intellect] which is separate and unaffected and unmixed, being in substance activity. For that which acts is always superior to that which is acted upon, the principle to the matter. Now actual knowledge is identical with the thing known, but potential knowledge is prior in time in the individual; and yet not universally prior in time. But it is not the case that this intellect sometimes thinks and sometimes does not. When separated it is just that which it is, and it is this alone which is immortal and eternal. But we are not mindful because this [i.e. the productive intellect] is not capable of being affected, whilst the intellect which can be affected [i.e. the passive intellect] is perishable; and without this there is no thinking.

CHAPTER 6

430a 26. The thinking of indivisible wholes belongs to a sphere from which falsity is excluded. But where both truth and falsity are possible there is already some combining of notions into one. As, in the words of Empedocles, 'where sprang into being the neckless heads of many creatures', then afterwards Love put them together, so these notions, first separate, are combined; as, for instance, the notions incommensurable and diagonal. And, if the thinking refers to the past or to the future, the notion of time is included in the combination. Falsity, in fact, never arises except where there is a combination. For, even if white be said to be not-white, not-white is brought into a combination. We may equally well call every proposition a division. But at any rate under truth and falsity we include not

only the proposition that Cleon is white, but also the proposition that he was or will be. And that which produces a unity is, in each case, the intellect.

430b 6. Since, however, the term indivisible has two uses, according as a whole is not capable of being divided or is actually undivided, there is nothing to hinder us from thinking an undivided whole, when we think of a length (that being actually undivided), or from thinking it in an undivided time. For the time is a divided or undivided unit in the same way as the length thought of. We cannot, therefore, say what the intellect thinks in each half of the time. For, if the whole be undivided, the half has only potential existence. But, if the intellect thinks each half separately, it simultaneously divides the time also. And in that case it is as if the parts were separate lengths. If, however, the intellect conceives the length as made up of the two halves, then the time may be regarded as made up of corresponding halves.

430b 14. Again, that which is not quantitatively but specifically an undivided whole the intellect thinks in an undivided unit of time and by an undivided act of the soul. *Per accidens*, however, such specific unity is divisible, though not in the same way as they, viz., the act of thought and the time required for the act are divisible, but in the same way as they are whole and indivisible. For in these specific unities also there is present something indivisible, though certainly not separate, the same as that which gives the unity of both the time and the length. And, as with time and length, so in like manner with whatever is continuous. But the point and every division and whatever is an undivided whole in the same sense as the point is clearly explained by the analogy of privation. And the same account holds in all other cases. How, for instance, is evil apprehended, or black? In some way by its contrary. But that which apprehends must potentially be, and must contain within itself, the contrary which it apprehends. If, however, there be something which has no contrary (some one of the causes), then it knows itself, is activity and is separate.

430b 26. Now every proposition, like an affirmative proposition predicating something of something, is true or false. But with thought this is not always so. That of what a thing is in

respect of 'what it is for it to be what it was' is true, but does not predicate something of something. But as the perception by sight of the proper object of sight is always true, the seeing whether the white object is a man or not is not always true; so it is in the case of objects which are without matter.

CHAPTER 7

431a 1. Now actual knowledge is identical with the thing known. But potential knowledge is prior in time in the individual, and yet not universally prior even in time. For it is from something actually existent that all which comes into being is derived. And manifestly the object of perception simply brings that which can perceive into active exercise: in this transition, that which can perceive is not acted upon or qualitatively changed. Consequently this must be a different kind of movement. For movement is, as we saw, an activity of that which is incomplete; but activity in the unqualified sense, that is, activity of the complete, is quite distinct.

431a 8. Perceiving, then, is analogous to mere propounding or mere thought and, when something is pleasant or painful, the pursuit or avoidance of it by the soul is a sort of affirmation or negation. In fact, to feel pleasure or pain is precisely to function with the perceptive mean, towards good or evil as such. It is in this that actual avoidance and actual desire consist: nor is that which can desire distinct from that which can avoid, nor either from that which can perceive, though what it is for them to be such is different. To the thinking soul phantasms serve as sense-perceptions: and when it affirms or denies good or evil, it avoids or pursues (this is why the soul never thinks without a phantasm). To give an illustration: the air impresses a certain quality on the eye-jelly inside the eye, and this in turn upon something else, and so also with the organ of hearing, while the last thing to be impressed is one and is a single mean, though what it is for it to be such is plural.

431a 20. What that is by which the soul judges that sweet is different from warm has been explained above, but must be reiterated here. It is a unity, but one in the same sense as a boundary point and its object are; the unity by analogy of these two things, or their numerical unity, is related to each of the

two in turn as they, taken separately, are to each other. For what difference does it make whether we ask how it judges those things that do not fall under the same genus, or the contraries which do, like white and black? Suppose, then, that as A, the white, is to B, the black, so C is to D (that is, as those are to one another). It follows, *convertendo*, that A is to C as B to D. If, then, C and D belong to one thing, the relation between them, like that between A and B, will be that they are one and the same, though what it is for them to be such is not the same: and so, too, of the other pair. The same account would hold supposing A were the sweet and B the white.

431b 2. Thus it is the forms which that which can think, thinks in phantasms. And, as in the region of sense-perception the objects of pursuit and avoidance have been defined for it, so also apart from sense-perception, when engaged with phantasms, it is moved to act: as, for instance, perceiving a beacon it recognizes that it is fire: and then (by the common sense) seeing it in motion it recognizes that it signals the approach of an enemy. But at other times under the influence of phantasms or thoughts in the soul it calculates as though it had the objects before the eyes and deliberates about the future in the light of the present. And when it pronounces, just as there in sense-perception it affirms the pleasant or the painful, here too in thought it pursues or avoids; and so in action generally. And further, what is unrelated to action, as the true and the false are, is in the same class as the good and the bad. Yet, in this, at any rate, they differ, that the former are absolute, the latter relative to someone concerned.

431b 12. But the abstract things, as they are called, the intellect thinks as it might conceive the snub-nosed; *qua* snub-nosed, it would not be conceived apart from flesh, whereas *qua* hollow, if anyone ever had actually so conceived it, he would have conceived it without the flesh in which the hollowness resides. So, too, when it [the intellect] thinks of mathematical objects, it thinks of them as separate though they are not separate. And, speaking generally, the intellect in active operation is its objects. The question whether it is possible for the intellect to think of any objects which are separate from spatial magnitude when it itself is not so separate, must for the present be postponed.

CHAPTER 8

431b 20. And now let us sum up what has been said concerning the soul by repeating that in a manner the soul is all existent things. For they are all either objects of perception or objects of thought; and knowledge and perception are in a manner identical with their respective objects. How this is so requires to be explained. Knowledge and perception, then, are subdivided to correspond to the things. Potential knowledge and perception correspond to things which are potential, actual knowledge and perception to things which are actual, while in the soul that which can perceive and that which can know are potentially these objects; I mean, object of perception and object of knowledge respectively. These must be either the things themselves or their forms. The things themselves they are not, for it is not the stone which is in the soul, but the form of the stone. So that there is an analogy between the soul and the hand; for, as the hand is the instrument of instruments, so the intellect is the form of forms and sense the form of objects of perception. But since, apart from perceptible magnitudes, there is nothing, as it would seem, separately existent, it is in the perceptible forms that the intelligible forms exist, both the abstractions of mathematics, as they are called, and all the dispositions and affections of perceptible objects. And for this reason, as without perception a man would not learn or understand anything, so at the very time when he is actually thinking he must have a phantasm before him. For mental phantasms are like sense-perceptions, except that they are without matter. Imagination, however, is distinct from affirmation and denial, for it needs a combination of notions to constitute truth or falsity. But, it may be asked, how will the primary notions differ in character from phantasms? I reply that neither these nor the rest of our notions *are* phantasms but that they cannot dispense with phantasms.

CHAPTER 9

432a 15. The soul in animals has been defined in virtue of two faculties/capacities, not only by its capacity to judge, which is the function of thought and perception, but also by the local movement which it imparts to the animal. Assuming the nature

of perception and intellect to have been so far determined, we have now to consider what it is in the soul which initiates movement; whether it is some one part of the soul, which is either spatially separable or separable in account, or whether it is the whole soul: and again, if a separate part, whether it is a special part distinct from those usually recognized and from those enumerated above, or whether it coincides with some one of these. A question at once arises in what sense it is proper to speak of parts of the soul and how many there are. For in one sense there appear to be an infinite number of parts and not merely those which some distinguish, the reasoning, passionate and wanting parts, for which others substitute the rational and the irrational. For, if we examine the differences on which they base their divisions, we shall find that there are other parts separated by a greater distance than these, namely, the parts which we have just discussed, the nutritive, which belongs to plants as well as to all animals, and the perceptive, which cannot easily be classed as either rational or irrational. Again, the part concerned with imagination is distinct from them all in what it is for it to be such and it is very difficult to say with which of the parts it is identical or not identical, if we are to assume separate parts of the soul. Then besides these there is the part concerned with desire, which would seem to be distinct both in account and in capacity from all the foregoing. And surely it is absurd to split this up. For there is wishing in the rational part and wanting and passion in the irrational. And, if we make a triple division of the soul, there will be desire in all three parts.

432b 7. To come now to the question at present before us, what is it that imparts to the animal local movement? For as for the motion of growth and decay, which is found in all animals, it would seem that this must be originated by that part of the soul which is found in all of them, the generative and nutritive part. Inspiration and expiration of breath, sleep and waking, subjects full of difficulty, call for subsequent enquiry. But to return to locomotion, we must enquire what it is that imparts to the animal progressive movement. That it is not the nutritive faculty or capacity is clear. For this movement is always for the sake of something and is attended either by imagination or by desire. No animal, which is not either seeking or avoiding

TRANSLATION OF TEXT

something, moves except under compulsion. Moreover, if it were the nutritive faculty, plants also would be capable of locomotion and thus would have some part instrumental in producing this form of motion. Similarly it is not the faculty of sense-perception, since there are many animals which have sense-perception and yet are throughout their lives stationary and motionless. If, then, nature does nothing in vain and, except in mutilated and imperfect specimens, omits nothing that is indispensable, while the animals we are considering are fully developed and not mutilated – as is shown by the fact that they propagate their kind and have a period of maturity and a period of decline – it follows that, if locomotion was implied in sense-perception, they would have had the parts instrumental to progression. Nor, again, is it the reasoning faculty or what is called intellect that produces such motion. For the contemplative intellect thinks nothing that is practical and says nothing about what is to be avoided or pursued, whereas the movement in question always implies that we are avoiding or pursuing something. But, even if it has something of the kind before it, the contemplative intellect does not forthwith enjoin avoidance or pursuit. For example, it often thinks of something alarming or pleasant without enjoining fear; the only effect is a beating of the heart, or, when the thought is pleasant, some other bodily movement. Besides, even if the intellect commands and thought bids us avoid or pursue something, still we are not thereby moved to act: on the contrary, action is determined by wanting; in the case, for instance, of the incontinent man. And generally we see that, although a man possesses a knowledge of medicine, it does not follow that he practises; and this implies that there is something else apart from the knowledge which determines action in accordance with the knowledge. Nor, again, is it solely desire on which this movement depends. The continent, though they feel desire, and have wants, they do not act as their desires prompt, but on the contrary obey reason.

CHAPTER 10

433a 9. It is clear, at any rate, that the sources of movement are these two, either desire or intellect, if we regard imagination as a kind of thinking. For men often act contrary to knowledge in obedience to their imaginings, while in the other animals

there is no thinking or reasoning, but solely imagination. Both these, then, produce locomotion: intellect and desire. By intellect here we mean that which reasons for the sake of something, that is, the practical intellect, which differs from the contemplative intellect by the end at which it aims. Desire, too, is always for the sake of something: for the object of desire is the starting-point of the practical intellect, and the last stage in this process of thought is the starting-point of action. Hence there is good reason for the view that these two are the sources of movement: desire and practical thought. For it is the object of desire which produces movement; and the reason why thought produces movement is that the object of desire is the starting-point of thought. Again, when imagination moves to action, it does not move to action apart from desire. Thus there is one thing which produces movement: the faculty of desire. For, had there been two, intellect and desire, which moved to action, still they would have done so in virtue of some form common to both. But, as a matter of fact, intellect is not found to produce movement apart from desire. For wishing is a form of desire; and, when anyone is moved in accordance with reason, he is also moved according to his wish. But desire may move a man in opposition to reason, for wanting is a form of desire. While, however, intellect is always right, desire and imagination may be right or wrong. Hence it is invariably the object of desire which produces movement, but this object may be either the good or the apparent good. Not every good, however, but practical good: where by practical good we mean something which may not be good under all circumstances.

433a 31. It is evident, then, that movement is due to the capacity of the soul corresponding to this object – I mean what is known as desire. But those who divide the soul into parts, if they divide it according to its capacities and separate these from one another, will find that such parts tend to become very numerous: nutritive, perceptive, thinking, deliberative, with the further addition of a part concerned with desire: for these differ more widely from one another than the wanting part does from the passionate part. Now desires arise which are contrary to one another, and this occurs whenever reason and wants are opposed, that is, in those animals which have a perception of time. For the intellect bids us resist because of the future, while wants

have regard only to the immediate present; for the pleasure of the moment appears absolutely pleasurable and absolutely good because we do not see the future. Therefore, whilst in kind that which produces movement will be one, namely, the faculty of desire, as such, and ultimately the object of desire (which, without being in motion itself, produces movement by the mere fact of being thought of or imagined), numerically there is a plurality of things which produce movement.

433b 13. Now movement implies three things: first, that which produces movement; second, that whereby it produces movement, and again, third, that which is moved; and of these that which produces movement is twofold: first, that which is itself unmoved and, second, that which both produces movement and is itself moved. The unmoved is the practical good, that which is moved and produces movement is the faculty of desire (for the animal which is moved is moved in so far as it desires, and desire as active is a kind of movement) and, finally, the thing moved is the animal. But the instrument with which desire moves it is something bodily: hence it must be dealt with under the functions common to body and soul. For the present, it may be enough to say summarily that we find that which produces movement as an instrument at the point where beginning and end coincide; as, for instance, they do in the hinge-joint, for there the convex and the concave are respectively the end and the beginning of movement with the result that the latter is at rest, while the former moves, convex and concave being different in account but spatially inseparable. For all things move by pushing and pulling, and accordingly there must be in them a fixed point, like the centre in a circle, and from this the motion must begin. Thus, then, in general terms, as already stated, the animal is capable of moving itself just in so far as it is capable of desire; and it cannot be capable of desire without imagination. Now imagination is either concerned with reasoning or perception. Of the latter the other animals also have a share.

CHAPTER 11

433b 31. We must also consider what produces movement in those imperfect animals which have perception only by touch. Is it possible that they should have imagination and wants, or is it

not? It is evident that they feel pleasure and pain: and, if they have these, then of necessity they must also have wants. But how can they have imagination? Shall we say that, as their movements are vague and indeterminate, so, though they have these things, they have them in a vague and indeterminate form? Imagination concerned with perception, then, as we have said, is found in the other animals also, but that concerned with deliberating in those alone which have reason. For the task of deciding whether to do this or that already implies reasoning. And there must be a single standard by which to measure, since what is pursued is superior. Hence we have the power of constructing a unity out of a number of phantasms. And the reason why the lower animals are thought not to have beliefs is that they do not have beliefs which come from inference, yet having beliefs involves imagination. And so desire does not imply the deliberative faculty. But sometimes it overpowers rational wish and moves to action; at other times the latter, rational wish, overpowers the former, desire. Thus one desire prevails over another desire, like one sphere over another sphere, in the case where incontinence has supervened. But by nature the higher sphere always has the predominance and gives rise to movement, so that three modes of movement are involved. The faculty of knowledge, however, is not subject to movement but is at rest.

434a 16. Since the one supposition and proposition is universal, the other particular – the former saying that such and such a kind of person ought to do such and such a kind of act, the latter saying that a particular act is one of the kind meant and that I am a person of the appropriate kind. Now it is the latter belief which really produces movement, not the universal one. Or shall we say that it is both together but that the one does so by being akin to a state like rest, whilst the other is not?

CHAPTER 12

434a 22. Every living thing, then, must have a nutritive soul and in fact has a soul from its birth till its death. For what has been born must necessarily grow, reach maturity and decline, and for these processes nutriment is indispensable. It follows, then, of necessity that the nutritive faculty is present in all

things that grow and decay. But sense-perception is not necessarily present in all living things. For wherever the body is uncompounded there can be no touch (yet without this nothing can be an animal): nor, again, can there be touch in those living things which are incapable of receiving forms apart from matter. But the animal must of necessity have sense-perception, if nature does nothing without a reason: for everything in nature exists for the sake of something, or else will be an accident of things which exist for the sake of something. Every living body having the power of progression and yet lacking sense-perception would be destroyed and never reach full development, which is its natural function. For how in such a case is it to obtain nutriment? Motionless animals, it is true, have for nutriment that from which they have been developed. But a body, not stationary, but produced by generation, cannot possibly have a soul and an intellect capable of judging without also having sense-perception. (Neither can it, if it be not generated.) For why should it have the one without the other? Presumably for the advantage either of the soul or of the body. But neither of these alternatives is, in fact, admissible. For the soul will be no better able to think, and the body will be no better off, for the absence of sense-perception. We conclude, then, that no body that is not stationary has soul without having sense-perception.

434b 9. Further, the body, assuming that it has sense-perception, must be either simple or composite. But it cannot be simple, for then it would not have touch, and this sense is indispensable. This is clear from the following considerations. The animal is an ensouled body. Now body is always tangible and it is that which is perceptible by touch which is tangible: from which it follows that the body of the animal must be capable of touch, if the animal is to survive. For the other senses, that is to say, smell, sight, hearing, have media of perception, but a being which touches and which has no sense-perception will be unable when it comes into contact with things to avoid some and seize others. And if this is so, it will be impossible for the animal to survive. This is why taste is a kind of touch, for taste is of nutriment and nutriment is body which is tangible; whereas sound, colour and smell afford no nourishment and promote neither growth nor decay. So that taste also must be a

kind of touch, because it is a perception of that which is tangible and nutritive. These two senses, then, are necessary to the animal, and it is plain that without touch no animal can exist.

434b 23. But the other senses are for the sake of well-being, and are necessary, not to any and every species of animal, but only to certain species, as, for example, those capable of locomotion. For, if the animal capable of locomotion is to survive, it must have perception, not only when in contact with anything, but also at a distance from it. And this will be secured if it can perceive through a medium, the medium being capable of being acted upon and set in motion by the perceptible object, and the animal itself by the medium. Now that which produces movement from place to place produces a change operating within certain limits, and that which pushes causes the thing pushed to push in turn, the movement being transmitted through something intermediate. The first in the series initiates movement and pushes without being itself pushed, while the last is simply pushed without pushing; the numerous intervening things of the series both pushing and being pushed. So it is also with qualitative change, except that what is subject to this change remains in the same place. Suppose we were to dip something into wax, the movement in the wax would extend just so far down as we had dipped the object, whereas a stone is not moved at all, while water is moved to a great distance and air is moved to the farthest extent possible and acts and is acted upon as long as it remains one and unbroken. And, to revert to the reflection of light, that is why, instead of holding the visual ray leaving the eye is reflected, it would be better to say that the air is acted upon by the shape and colour, so long as it is one and unbroken. This is the case over any smooth surface: and accordingly the air acts on the organ of sight in turn, just as if the impress on the wax had penetrated right through to the other side.

CHAPTER 13

435a 11. It is evident that the body of an animal cannot be uncompounded; I mean it cannot consist entirely of fire, for instance, or of air. An animal, unless it has touch, can have no other sense-perception, the ensouled body being always, as we have remarked, capable of touch. Now the other elements, with

the exception of earth, could become sense-organs: but it is always indirectly and through media that such organs produce sense-perception. Touch, however, acts by direct contact with objects: hence its name. The other sense-organs, it is true, also perceive by contact, but it is by indirect contact: touch alone, it would seem, perceives directly in and through itself. Thus, then, no one of the elements referred to can constitute the body of the animal. Nor indeed can it be of earth. For touch is a sort of mean between all objects of touch, and its organ is receptive not only of all the distinctive qualities of earth, but also of heat and cold and all other objects of touch. And this is why we do not perceive anything with our bones and our hair and such parts of us, namely, because they are of earth. And for the same reason plants, too, have no sense-perception, because they are composed of earth. Without touch, however, there can be no other sense; and the organ of this sense does not consist of earth nor of any other single element.

435b 4. Thus it is evident that this is the only sense the loss of which necessarily involves the death of the animal. For it is not possible for anything that is not an animal to have this sense, nor is it necessary for anything that is an animal to have any other sense besides this. And this explains another fact. The other objects of perception – I mean colour, sound, odour – do not by their excess destroy the animal, but only the corresponding sense-organs: except incidentally, as when concurrently with the sound some thrust or blow is given, or when objects of sight or smell move something else which destroys by contact. Flavour, again, destroys only in so far as it is at the same time tactile. Objects of touch, on the other hand, hot, cold and hard things, if in excess, are fatal to the living animal. For excess in any perceptible object is fatal to the organ, and so consequently excess in the object of touch is fatal to touch. And it is by this sense that the life of the animal as such is determined; touch having been proved to be indispensable to the existence of an animal. Hence excess in objects of touch destroys not only the sense-organ, but also the animal itself. For touch is the one sense that the animal cannot do without. The other senses which it possesses are, as we have said, the means, not to its being, but to its well-being. Thus the animal has sight in order to see because it lives in air or water or, speaking generally, in a

DE ANIMA

transparent medium. It has taste on account of what is pleasant and painful, in order that it may perceive what is pleasant in food and has wants and is moved according to those wants. It has hearing in order that information may be conveyed to it, and a tongue, that in its turn it may convey information to another animal.

I

ARISTOTLE ON SENSE-PERCEPTION

Thomas J. Slakey

In modern times some kind of distinction has generally been made between the physiological condition of perception – an event or series of events in the body – and the psychological or mental event of perception itself, which used to be said to occur in the soul. This distinction goes back at least to Descartes, and modern commentators generally read it into Aristotle's *De Anima* (hereafter referred to as *De An.*). Thus G. Rodier understands Aristotle as holding that the modification of the sense organ is only the 'condition' of perception.¹ R. D. Hicks thinks that Aristotle distinguishes soul from body and holds that perception occurs in the soul, not the body.² W. D. Ross realizes that Aristotle does not make a clear distinction between physiological conditions and mental events, but Ross sees him as working towards it.³ Thus the most interesting thing about Aristotle's discussion of perception is obscured and even ignored: Aristotle tries to explain perception simply as an event in the sense organs.

This paper analyses that attempted explanation in detail, with particular attention to the claims that sense is a *mesotes*, or 'mean' (424a 4), and that one perceiving becomes 'like' the things he perceives (418a 4–6).⁴ My analysis shows why these claims seem to have explanatory value, and why they in fact have none. It also shows why Aristotle conceived of intellect as something non-bodily (*De An.* III, 4).

I

Aristotle opens his discussion of perception in *De An.* II, 5 by describing perception as a kind of 'change' or 'being acted

upon' (416b 33–4).⁵ It becomes clear that what Aristotle has in mind here is the change which external objects produce on the various sense-organs. Thus he says that 'the objects that excite the sensory powers to activity, the seen, the heard, etc., are outside' (417b 20–1), and he goes on in *De An.* II, 7–11, to explain how each of the sense-organs is acted upon by a different sort of external object. The bulk of his discussion of perception is directed towards showing that each kind of object affects a sense-organ via some medium. Thus colour causes change in something transparent, such as air, which in turn causes change in the eye (419a 14–15). A sounding object sets in motion a mass of air, and this in turn affects the organ of hearing (420a 3). Odours affect the organ of smell via air or water (421b 8). Even flavoured and tangible objects affect the organs of taste and touch via a medium, namely the surface flesh. The surface flesh is not itself the organ of taste or touch; rather, these organs are located somewhere within the flesh (422b 33–423b 26).

At the end of this long account of the way in which external objects affect the sense organs, Aristotle tries in a brief but crucial passage to explain what sense is and why it has the power of discerning (423b 27–424a 9). His theory is developed from a consideration of touch, but it applies to perception generally (423b 33). It is this passage that I wish to examine in detail.

What can be touched are distinctive qualities of body *as* body; by such differences I mean those which characterize the elements, viz. hot cold, dry moist, of which we have spoken earlier in our treatise on the elements.

(423b 27–30)

In the 'treatise on the elements', that is, the *De Generatione et Corruptione*, Aristotle argues that the other pairs of tangible qualities – heavy–light, hard–soft, viscous–brittle, rough–smooth, and coarse–fine – derive from the two primary pairs: hot–cold and dry–moist (*De Gen.* II, 2):

The organ for the perception of these is that of touch – that part of the body in which primarily the sense of touch resides. This is that part which is potentially such as its object is actually: for [all] sense perception is a process of

being [so] affected; so that that which makes something such as it itself actually is makes the other such because the other is already potentially such.

(423b 30–424a 2)⁶

The 'these' in the first line refers to the tangible qualities hot–cold and dry–moist mentioned above. By saying that the sense of touch 'primarily' resides in the organ, Aristotle means only to contrast the organ of touch with the surface flesh, the medium of touch, in which the sense of touch does not primarily reside.⁷

The first important point in these lines is that Aristotle here seems to speak interchangeably of perception and of the action by the object of touch on the organ. The organ, a 'part of the body', is said to be 'potentially such as its object is actually', and the object is said to make the organ 'such as it itself actually is'. Perception seems to be simply that 'process of being [so] affected'. So interpreted, perception is simply the movement which occurs in the sense-organs, not some psychic process in addition to the movement in the organs. This interpretation will be substantiated in what follows.

The second important point is that Aristotle here states a hypothesis about perception which he thinks has explanatory value, namely the hypothesis that perception is a process in which the object perceived makes the sense organ 'such as it itself actually is'. To understand what this hypothesis means, let us see how Aristotle uses it in lines immediately following the above to explain certain phenomena of perception:

That is why when an object of touch is equally hot and cold or hard and soft we cannot perceive; what we perceive must have a degree of the sensible quality lying beyond the neutral point.

(424a 2–4)

The word 'equally' in the statement that we cannot perceive what is 'equally' hot and cold or hard and soft must mean equally hot and cold or hard and soft as compared with ourselves or with some part of ourselves. Since it is the sense-organs which are in question here and which are said to change from being potentially such as the perceived objects to being actually such as the perceived objects, the 'equally' hot and cold or hard and soft must mean as compared with the sense-organs.

The sense organ involved in perceptions of hot and cold, hard and soft, is the organ of touch. Thus, Aristotle here makes the following factual claims: we cannot perceive by touch a temperature or a hardness equal to that of the organ of touch; what we perceive by touch as hot or cold must be hotter or colder than the organ of touch; what we perceive by touch as hard or soft must be harder or softer than the organ of touch.

Assuming that these factual claims are correct, and given that Aristotle's hypothesis about perception is supposed to explain 'why', *διό* (424a 2), these facts occur, what is the meaning of this hypothesis? It is expressed in the statement that sense-perception is a process in which the perceived object makes the sense organ 'such as it itself actually is'. If this statement be taken literally, it means that perception is a process in which perceived hot objects make the organ of touch hot, and so on. This literal interpretation is exactly what we must give to the statement if it is to explain 'why' we cannot perceive what is equally hot and cold or hard and soft. For what is hot or cold or hard or soft in a certain degree cannot *change* to being hot or cold or hard or soft in that degree. And if perception is a process in which the sense organ must *become x* when *x* is perceived, then we would not be able to perceive what is equally *x*.

So far Aristotle's theory is stated only for perceptions of hot and cold, hard and soft. But it is applied to perception generally (423b 33), and a few lines later it is explicitly stated for perceptions of colour:

As what is to perceive *both* white and black must, to begin with, be actually neither but potentially either (and so with [all] the other [sense-organs]), so the organ of touch must be neither hot nor cold.

(424a 8–9)⁸

Just as the organ of touch must not be equal in temperature to the thing perceived as hot so that it can *change* to hot, so the organ of sight must be neither white nor black so that it can change to white or black. Aristotle's reasoning can only be that perception of white is a process in which the organ of sight becomes white, and so on for the perception of the other colours. The same conclusion is extended *mutatis mutandis* to the other sense-organs.

There is a striking passage in *De An.* III which confirms this

interpretation. Aristotle raises the question as to how we are aware that we are, for example, seeing. He says that if we are to be aware that we are seeing by a kind of sight, 'then if we are to see that which sees, that which sees originally must be coloured' (425b 18–19). But this offers no difficulty for Aristotle because 'in a sense even that which sees *is* coloured; for in each case the sense-organ is capable of receiving the sensible object without its matter' (425b 23–4). Aristotle says that that which sees is coloured, which seems to mean that the sense-organ is coloured. While the 'in a sense' makes Aristotle's meaning vague, he has to hold, if he is to solve the present difficulty by this argument, that the organ becomes coloured in the act of perception in a way in which it could be *seen*. Hence it seems that the organ must become coloured in the sense in which it could be said to become red, green and so forth. Furthermore, while Aristotle expressly discusses here only the case of seeing, the difficulty he considers applies generally to all the senses, namely how we are aware that we are perceiving. Presumably Aristotle intends that his solution for the case of seeing be extended to all the other senses.

I therefore submit as conclusively established a literal interpretation of Aristotle's statement that perception is a process in which the perceived object makes the sense-organ 'such as it itself actually is'. This interpretation can be expressed in the following proposition, which I will label A: *an object which is perceived to be x makes the sense-organ involved in its perception to be itself x*.

Ross agrees that Aristotle holds A, though he regards it as an incidental slip on Aristotle's part.⁹ The important question is whether Aristotle holds (i) that perception is *identical* with the organ becoming *x*, identifying, for example, someone's seeing a red object with his organ of sight becoming red; or (ii) that sense perception *depends* on the process in which the organ becomes *x*, but is not identical with it. This question can be settled by returning to the passage which we have been studying. The conclusion that we cannot perceive what is equally hot and cold or hard and soft depends on the claim (A), that when something is perceived to be *x*, a sense-organ becomes *x*. It is a *sense-organ* which is said to become *x* when *x* is perceived, as I have shown, and it is what is equally hot and cold or hard and soft with the *organ* of touch which we cannot perceive.

From these alleged facts about the *sense-organ*, Aristotle now goes on to explain what *sense* is:

This implies that the sense [itself] is a 'mean' [*mesotes*] between any two opposite qualities which determine the field of that sense. It is to this that it owes its power of discerning the objects in that field. What is 'in the middle' is fitted to discern; relatively to either extreme it can put itself in place of the other.

(424a 4–7)¹⁰

Aristotle here tries to explain what sense is and why it has the power of discerning. This explanation is based on the concept of sense as a 'mean' or midpoint between extremes (the literal meaning of *mesotes*). For Aristotle each sense covers one or more ranges of sensible qualities between extremes. For example, sight covers colours, which range between the extremes of black and white (see 426b 8–10). The power of sense – that is, the power to discern – is explained simply by the fact that each sense is a 'mean' between the extreme qualities which determine the range of that sense. Apparently to say that the sense is a 'mean' is to say that sense can move towards one extreme or the other, or, as J. A. Smith puts it in the Oxford translation, 'relatively to either extreme it can put itself in the place of the other'.¹¹

From the claim that we cannot perceive what is equally hot and cold or hard and soft with the *sense-organ*, Aristotle thus concludes that the *sense* is a 'mean' between the extremes. He thus apparently holds that the movement towards extremes which the *sense* is said to accomplish is identical with the change to hot or cold, hard or soft, which occurs in the sense-organ. On this interpretation the relation between the sense and the sense-organ would be as follows: the *sense-organ* is a part of the body which becomes hot when heat is perceived, and so forth; each *sense* is located in a part of the body and is the *power* of the sense-organ to change in temperature or colour, and so forth; on this interpretation, the power to discern temperature is explained simply as the power of the sense-organ to change in temperature; the power to discern colour is explained simply as the power of the sense-organ to change colour, and so on for the other senses. There is no distinction between the change of the sense and the change of the sense-

organ. The only distinction between 'sense' and 'sense-organ' is that the word 'sense' refers to the power of the sense-organ to change within a certain range of qualities.

If we do not interpret Aristotle in this way, then his explanation of the power of discerning, which sense has, by the claim that sense is a 'mean' in no way follows from his claim that when something is perceived to be x a sense-organ literally becomes x , and from his use of this claim to explain why we cannot perceive what is equally hot and cold. But Aristotle claims that his explanation of sense does follow from these claims about the sense-organs, as is shown by the way in which he connects the two ideas in 424a 4, analysed above. Therefore I conclude that in this passage Aristotle holds that the perception of x is identical with a sense-organ becoming x , because he tries to explain the perception of x as the change of the sense-organ to x . My interpretation can be expressed in the following proposition, which I shall label B: *the perception of x can be understood as a sense-organ becoming x .*

There is an obvious difficulty for such a theory of perception, a difficulty which Aristotle makes explicit in *De An.* II, 12, almost immediately following the passage I have analysed above. He notes that plants, for example, do become hot and yet do not perceive heat (424a 32–4). Why not? The fact that Aristotle raises this question does not overturn my interpretation of him by B. Indeed this question would naturally arise given the theory of perception expressed by B. In answering it, he does not reject the view that perception is a becoming x in a sense-organ, but tries to show that a sense-organ becomes x in a special way.

Thus he says of plants:

They have no mean [of contrary qualities], and so no principle in them capable of taking on the forms of sensible objects without their matter; in the case of plants the affection is an affection by form and matter together.
(424b 1–3)¹²

Aristotle says that plants cannot perceive because they do not have a *mesotes* or 'mean' and hence cannot receive 'forms of sensible objects without their matter'. I shall turn to the latter phrase in a moment. First, let us consider the claim that plants do not have a *mesotes*. As this term was introduced in 423b

27–424a 9, it meant the power to become hot, red, and so forth. We were able to understand Aristotle's concept of sense as a *mesotes* because we took it as meaning that a sense organ becomes x in the way that, for example, a plant becomes x , and we know what it is like for a plant to become x . But then the concept of sense as a *mesotes* cannot be used to explain how the becoming x of a sense-organ *differs* from the becoming x of a plant.

In the rest of *De An.* II, 12, Aristotle continues his attempt to explain the difference between beings which can perceive and beings which cannot. Yet it is extremely interesting that after 424b 3 he does not use any of the philosophical language with which he has described perception, such as the claim that sense is a 'mean'. Instead he relies on a word in ordinary use, *aisthanesthai*, meaning 'perceive' or 'observe' or sometimes more specifically, 'see', 'hear' or 'feel'. Thus he notes that air cannot smell odour, though it does become odorous (424b 15–16). He goes on:

But smelling is more than such an affection by what is odorous – *what* more? Is not the answer that, while the air owing to the momentary duration of the action upon it of what is odorous does itself become perceptible to the sense of smell, smelling is an *observing* [*aisthanesthai*] of the result produced?

(424b 16–19)

But what has he explained here? Smelling differs from becoming odorous in that smelling is an 'observing' or 'perceiving'. But if asked what 'observing' is, Aristotle would have to reply that observing is, for example, smelling. He has merely replaced the specific term 'smell' by the generic term 'observe'. He is trying to explain how perceiving x differs from becoming x . If the answer is put in generic terms it becomes a tautology: perceiving x differs from becoming x in that perceiving x is perceiving x .

Thus Aristotle's attempt to explain perception fails. He begins with the conception of perceiving x as a kind of becoming x , and of sense as a 'mean' or power to become x within a certain range. He realizes that perceiving x must be a special kind of becoming x , yet when he tries to show what is special about it, he finds himself forced to say that perceiving is perceiving.

By using the word *aisthanesthai*, 'perceive', it is possible to give content to the statement that sense is a *mesotes*: it means simply that sense is the power to perceive. But then the technical term *mesotes* depends for its own meaning on the word 'perceive' and adds nothing to it. It cannot be used to *explain* what it is to perceive.

Let us now return to the claim that plants cannot perceive because they cannot receive 'the forms of sensible objects without their matter' (424b 2). Here also Aristotle tries to distinguish the becoming *x* of the sense-organ from, for example, the becoming *x* of a plant.¹³ A plant which becomes hot would be said to 'receive a form', according to the general theory of change in *Phys.* III, 1–3. The sense-organs receive the form of heat in a *special* way, 'without matter'. We can understand this if it means simply that one 'sees' or 'perceives' heat, but then the phrase 'receiving forms without matter' cannot be used to explain what perception is; it simply repeats the meaning of 'perceives' in obscure philosophical language.

Aristotle makes one other attempt to distinguish the becoming *x* of a sense-organ from the becoming *x* of other things, namely in his contrast between the two senses of the term 'alteration' or 'change of quality' (*De An.* II, 5).

Ordinary changes of quality involve the loss of one quality when another is gained (417a 32; 417b 3, 16), whereas perception is a change of quality in which there is only 'maintenance' (σωτηρία, 417b 3) or 'development' (ἐπίδοσις, 417b 7) of a quality without the loss of an opposite quality (417b 3–7, 15–17). The difference seems to be only that water which becomes hot must lose the quality cold, but a sense-organ becomes hot without losing the quality cold. This difference is obscure, because it is a logical truth that anything which becomes hot (that is, hotter than it was) must have ceased to be cold (that is, colder than it now is). But in any case Aristotle seems to emphasize only that no quality is *lost* in perception; he does not deny that a quality is *gained*. Therefore he has not shown how the gaining of heat by the sense-organ differs from the gaining of heat by water.

Thus Aristotle fails in his attempt to explain perception in terms of proposition B. While proposition A may be true in some cases, such as perceptions of hot and cold, it has no significance in a general theory of perception.

Aristotle should have asserted merely the following proposition, which I shall label C: *an object which is perceived produces some sort of change in a sense-organ*. While in our time this proposition seems obviously true, it represents a solution to the principal problem which Aristotle poses for himself in *De An.* II, and it is a considerable advance over Empedocles' theory of sense-perception as Aristotle conceives it. According to Aristotle, Empedocles held that what has a soul knows other things because the elements of those things are present in the knower himself as elements of his own soul (404b 9–15; 409b 23–6). The implication is that what has a soul knows other things by knowing the elements of those things in its own soul. Thus it would not really know other things *as other things* at all, but would only know elements of itself. In beginning the development of his own theory in *De An.* II, 5, Aristotle asks why someone like Empedocles does not hold that we 'perceive the senses themselves as well as the external objects of sense' (417a 3–4). The problem is to explain how we get knowledge of other things *as other things*. Aristotle puts the same point in another way by asking why someone like Empedocles does not hold that those having souls perceive 'without [the stimulation of] external objects . . . seeing that they contain in themselves fire, earth, and all the other elements, which are the direct or indirect objects of sense' (417a 4–6).¹⁴ Thus Aristotle concludes that 'what is sensitive is so only potentially, not actually' (417a 7) and that perception depends 'on a process of movement or affection' (416b 34) by external objects. The problem is to explain how the individual having senses is brought from potentially perceiving external objects to actually perceiving external objects. The answer is that external objects affect the sense organs through various media, and Aristotle devotes the bulk of *De An.* II, 7–11 to showing how the various sensible qualities of external objects affect the various sense-organs. These specific formulations of the general proposition C represent a considerable advance over Empedocles' view and a solution to the problem of sense-perception as Aristotle conceived it.

The mistake is to think that the conclusion explains more than it does – that is, to move from the conclusion C, that perception depends on the effect of objects on sense-organs, to B, that in some vague way the effect on the sense-organs is identical with perception and therefore that the organ becoming,

for example, hot can explain the perception of heat. The mistake is to think that we can explain perception not only in the sense of specifying physiological phenomena upon which it depends, but in the sense that we can somehow make more clear what perception is and how it is that an animal has the power of discerning (424a 3–7). The attempt to provide such an explanation leads to the concepts of sense as a ‘mean’, as ‘receiving forms without matter’, and as becoming ‘like’ things perceived, concepts which draw their meaning from various lines of thought about perception, and which therefore seem to have some explanatory value with respect to perception, but which in fact have none.

II

Not all of Aristotle’s works reflect an analysis of perceiving x as a kind of becoming x in a sense-organ: Thus in the *De Sensu* Aristotle says that perception ‘is generated in the soul through the medium of the body’ (διὰ σώματος γίνεται τῇ ψυχῇ, 436b 7). He here suggests a distinction between an effect on the body, which is only the medium of perception, and an effect on the soul, which is perception itself. Similar statements are found in *Mem.* 450a 27–9, and *Som.* 454a 7–11.

Hicks takes such passages as expressing a ‘neat summary’ of Aristotle’s account of perception in the *De Anima*.¹⁵ However, they do not agree with the *De Anima* as I have interpreted it, and they probably belong to an earlier stage in Aristotle’s thinking about soul and body. François Nuyens establishes three such stages: (i) a Platonist view, found in Aristotle’s early dialogues, in which the soul and body are opposed ‘comme deux forces ennemies’; (ii) a view found in most of the works on biological and moral subjects in which the soul and body are still thought of as independent substances, but now they ‘collaborent à une œuvre commune et . . . cette collaboration est “naturelle”’ (in this state, the power of the soul is thought to be exercised through a particular part of the body, usually the heart);¹⁶ (iii) the view expressed in the *De Anima* in which the soul and body are no longer thought of as distinct substances, but as the form and matter, respectively, of one substance.¹⁷ Aristotle does use the language of soul ‘and’ body in the *De Anima*, but he says that soul and body are one in the same sense

in which the shape of wax (form) and the wax itself (matter) are one (412b 6–9). The unity of form and matter is for Aristotle the paradigm case of unity (*ibid.*). Thus one cannot construe the *De Anima* as saying that the effect of an external object on a part of the body, the sense-organ, is distinct from perception itself, which is an effect on the soul. In the *De Anima* perception is presented as an event in a sense-organ.

III

It remains to comment briefly on Aristotle's contrast between perception and the activity of *noûs*, or intellect. By analogy with sense, which is said to receive 'sensible forms', intellect is said to receive 'forms' simply (429a 13–18). But while the activity of sense is bodily, as we have seen, the activity of intellect is said to be non-bodily (429a 24–6). Why this difference?¹⁸

Aristotle's arguments on this point in *De An.* III, 4, are obscure and I shall not analyse them in detail. But I think that what lies behind these arguments is that Aristotle could conceive of, for example, perceiving red as a kind of becoming red, and therefore as a kind of bodily activity, but he could not conceive of the activity of intellect on the same model. For one thing, intellect apprehends not merely a set of sensible qualities within a given range, like the senses, but every sort of quality in every sort of range: 'everything is a possible object of thought' (429a 18). Second, the forms which intellect receives are the 'essences' of things (429b 10). The meaning of 'essence' cannot be briefly stated, but understanding essences would at least involve a distinction of some kind between essential and non-essential properties. Aristotle could not conceive of an activity with these two characteristics as occurring in a bodily organ, and therefore he held that *noûs* is non-bodily.

When one realizes that the perception of *x* cannot be explained simply as the becoming *x* of a sense-organ, then the distinction between sense as bodily and intellect as non-bodily no longer seems plausible. Neither sense nor intellect is bodily in the sense that perception or thinking can be understood simply as a part of the body becoming *x*; yet both perception and thinking may be bodily in the sense that one can *correlate* specific kinds of perception or thinking with specific events in the sense-organs or in the brain.

Could one refute Aristotle's claim that intellect is non-bodily simply by showing that every time anyone performs a mathematical calculation or makes a metaphysical argument, a certain characteristic change occurs in his brain? No. Aristotle's claim that thinking is impossible without sensory images (432a 3–8) here plays a crucial role. He could say that the recorded brain activity is that of the sensory faculty of imagination, and is thus only *indirectly* connected with the activity of intellect.¹⁹ Indeed, on the supposition that the intellect itself has no bodily organ, a constant correlation of thoughts with brain states would serve as proof that thinking is impossible without the exercise of some sensory faculty, since it is thought that only a sensory faculty has a bodily organ. This sensory faculty is taken to be imagination. Thus we would have a proof of the claim that the exercise of the intellect is impossible without the exercise of the imagination. It then becomes difficult to see what factual observation could refute either Aristotle's doctrine that intellect has no bodily organ, or his doctrine that intellect is not exercised without imagination, when these two doctrines are held jointly. The only refutation which can be offered is to show that there is no a priori reason why specific acts of thinking cannot be correlated with specific events in the brain, just as specific perceptions can be correlated with specific events in the sense-organs. One is then prepared to allow that the brain is the organ of intellect, and is not inclined to interpose a different faculty, the imagination, as the link between exercise of the intellect and changes in the brain.

NOTES AND REFERENCES

This article is drawn from a dissertation produced at Cornell University under the direction of Professor David Sachs.

- 1 G. Rodier, *Aristote: Traité de l'âme*, 2 vols. (Paris: Vrin, 1900), II, pp. 261, 330.
- 2 R. D. Hicks, *Aristotle: 'De Anima'* (Cambridge: Cambridge University Press, 1907), pp. xlvi, 483.
- 3 W. D. Ross, *Aristotle*, 5th edn, rev. (London: Methuen, 1953), pp. 136–7.
- 4 Aristotle's word for 'like' is οἶον. The Oxford translator renders this word as 'identical in quality with'. Unless otherwise indicated, quotations of Aristotle in English are from *The Works of Aristotle*

Translated into English, 12 vols. (Oxford: Clarendon Press, 1931). For the most part, I quote from the reprint of these translations in R. McKeon (ed.), *The Basic Works of Aristotle*, (New York: Random House, 1941). Quotations of the Greek text of the *De Anima* and the *Parva Naturalia* are from the Loeb Classical Library edition by W. S. Hett (London: Heinemann, 1957).

- 5 ἡ δ' αἴσθησις ἐν τῷ κινεῖσθαι τε καὶ πάσχειν συμβαίνει. In the Oxford translation: 'Sensation depends . . . on a process of movement or affection from without.' Whether perception 'depends on' this change, as the Oxford translator reads it, or *is* this change, as I suggest, will be settled below. Aristotle's use of the phrase συμβαίνει ἐν does not decide this issue. Hett, in the Loeb edition, and Hicks, *Aristotle: 'De Anima'*, both render this phrase as 'consists in'.
- 6 I have bracketed the words 'all' and 'so' in the Oxford translation since they are not explicit in the Greek: τὸ γὰρ αἰσθάνεσθαι πάσχειν τι ἐστίν.
- 7 Hicks points this out, citing 422b 22 in support (*Aristotle: 'De Anima'*, p. 412).
- 8 I have bracketed the words 'all' and 'sense-organ' in the Oxford translation, since they are not explicit in the Greek: οὕτω δὴ καὶ ἐπὶ τῶν ἄλλων.
- 9 Ross, *Aristotle*, pp. 136–7.
- 10 I have bracketed the word 'itself' in the Oxford translation. Aristotle simply says ἡ αἴσθησις.
- 11 It is true that the last line of this passage is far from clear in the Greek. Smith's 'relatively to either extreme it can put itself in the place of the other' renders γίνεται γὰρ πρὸς ἑκάτερον αὐτῶν θάτερον τῶν ἀκρῶν, which might be more literally rendered as 'for it (the mean, i.e. the sense) becomes other (*thateron*) towards each of the extremes'. But the word *thateron* is frequently used in expressions indicating alternation from one way to another or from one side to another. Hence in the context of this passage, Smith takes *thateron* as meaning that the sense can move in one or other direction in a range between extremes. Hicks (*Aristotle: 'De Anima'*) reads the line as saying that the mean, i.e. the sense, becomes *opposite* to each extreme, but it is hard to make sense out of this: 'For the mean is capable of judging, becoming to each extreme in turn its opposite.' I follow Smith's translation, according to which Aristotle means that the sense can change in the direction of either extreme in a range of sensible qualities.
- 12 I have bracketed the phrase 'of contrary qualities' in the Oxford translation, since it is not explicit in the Greek.
- 13 It is the becoming *x* in a *sense-organ* that is being spoken of when this description of sense as receiving forms without matter is first introduced (424a 18). Sense is not a magnitude, οὐδ' ἡ αἴσθησις μέγεθος ἐστίν (424a 28), but it is a ratio or power of a magnitude, ἀλλὰ λόγος τις καὶ δύναμις ἐκείνου (424a 29).

ARISTOTLE ON SENSE-PERCEPTION

This 'power' or 'ratio' is said to be destroyed if it moves too far towards one extreme or another in its range of sensible qualities (424a 28–32 as glossed by 426a 31–426b 3). Thus sense here seems to be simply the power of a sense-organ to change within a range of sensible qualities, e.g. temperatures or colours.

- 14 I have bracketed the modern term 'stimulation', used by the Oxford translator. No such word appears in the Greek.
- 15 Hicks, *Aristotle: 'De Anima'*, p. 483.
- 16 François Nuyens, *L'Evolution de la psychologie d'Aristote*, (Louvain, 1948), p. 57.
- 17 See *ibid.*, pp. 57–8, for an outline of this view, and chs ii, iv and vi for detailed argument. It must be noted that Nuyens himself places both the *De Sensu* and the *De Memoria et Reminiscentia* in Aristotle's final stage (*ibid.*, pp. 251–2). However, as Ross argues, texts like those cited, 436b 7 and 450a 27–9, show that Nuyens should have assigned both of them to Aristotle's second stage: W. D. Ross, *Aristotle: 'Parva Naturalia'* (Oxford: Oxford University Press, 1955, pp. 14–18).
- 18 If intellect is non-bodily, it would seem that intellect could not be a faculty of the soul, since the soul is the form of the body. Aristotle suggests this as a possibility in *De An.* I, 4, 408b 18–20. The relation between intellect and soul is not made clear in *De An.* III, 4–5. On this subject see Nuyens, *L'Evolution*, ch. vii.
- 19 Aristotle held that the central organ of sense was the heart, not the brain (469a 10–23), but *mutatis mutandis* the argument is the same.

II

A NEW LOOK AT ARISTOTLE'S THEORY OF PERCEPTION

Terrell Ward Bynum

I. INTRODUCTION

Aristotle's theory of perception is often thought to be 'of merely historical interest'. This misconception derives, in part, from the fact that Aristotle employed physical and physiological theories that are now outdated. It is relatively easy, however, to replace Aristotle's physics and physiology with modern theories and still preserve his basic account of perception.

More importantly, the mistaken 'merely historical interest' view derives also from a belief that Aristotle lived too early in history to have been aware of certain crucial conceptions or distinctions. So it is sometimes said, for example, that Aristotle's 'pre-Cartesian' philosophy could not take proper account of the subjectivity of experience; and Hamlyn, for example, in his history of the philosophy of perception (Hamlyn 1961, p. 28), claims that Aristotle had no distinction between 'passive sensation' and 'active perception'. Contrary to such pessimistic views, the present article shows that Aristotle had a powerful theory of perception which can rival any that is currently in vogue.

II. THE ARISTOTELIAN CONTEXT

In order to understand Aristotle's theory of perception, one should initially 'see it in context'. That is, one should call to mind some key ideas from Aristotle's metaphysics, physics and physiology.

For example, one needs to keep in mind his distinction between *matter* – the substrate which persists through change and can 'take on' different characteristics or 'forms' – and

forms or qualities that matter takes on. Form and matter occur together – form (in the sublunary world, at least) is always ‘enmattered’. Individual composites of matter and form Aristotle calls ‘composite substances’. The least complex substances are earth, air, fire and water, which, when ‘completely mixed’, form the ‘homoeomerous bodies’ such as minerals and the tissues of plants and animals. Combinations of tissues form organs, and organs combined into wholes form organisms.

The distinction between matter and form enables Aristotle to explain change. Every change involves three things: *a privation, a form, and a substrate*. At the beginning of the change, the substrate lacks the form in question (although it does have a different form); at the end of the change, the substrate has taken on the form. This general analysis applies whether the change is *quantitative* (change in size), *qualitative* (change in colour, for example), or *locomotive* (change of position).¹ It also enables Aristotle to introduce the key notions of potentiality and actuality: change can be seen as the fulfilment of a potentiality. Prior to the change, the substrate *potentially* has the form in question, afterwards it *actually* has it. Actuality must always precede potentiality, since potentiality is *for* an activity or state of affairs. The fulfilment of the potentiality can be brought about only by the action of something that is already an actuality.

In addition to his physics and metaphysics, Aristotle's physiology should be kept in mind if one is to understand his account of perception. He believed, for example, that the brain is a mechanism for cooling the body, while the heart is the seat of perception, emotion and thought. Blood vessels, on the other hand, he took to be channels of communication between the heart and all parts of the body.

Aristotle, of course, was not troubled by post-Cartesian puzzles about how mind can interact with body. For him, mind (soul) ‘is the form or functional organization of a certain kind of body and . . . the various “parts of soul” are functional states of matter’ (Nussbaum 1978, p. 146). Soul, therefore, is not a substance that can exist apart from body (with the possible exception of intellect, which will not concern us here):

The most important attributes of animals, whether common to all or peculiar to some, are, manifestly, attributes

of soul and body in conjunction, e.g. *sensation, memory, passion, appetite and desire in general*, and, in addition, *pleasure and pain*.

(*Sens.* 426a 8–9)²

Many post-Cartesian philosophers consider such attributes to be ‘mental’ – therefore ‘subjective’ and ‘private’ – therefore puzzling and troublesome. Aristotle deals with them simply as the activities and functions of a living body, sometimes describing them in physiological language, sometimes in what is today called ‘mental’ language. (And, as we shall see below, he can easily account for their ‘private’ and ‘subjective’ nature.)

III. THE KEY ELEMENTS OF PERCEPTION

Aristotle starts by accepting the commonsense assumption that the senses provide reliable information about objects in the environment. This is the kind of ‘*phainomenon*’ (i.e. a generally accepted belief or one taught by ‘the wise’) that serves as a starting-point for Aristotle’s ‘dialectical’ method of philosophy. Since even the lowest forms of animal have perception (indeed, this is what distinguishes animals from plants), Aristotle does not assume that information comes in through the senses in a form that is propositional. That would require linguistic capabilities that most animals lack.

Aristotle’s way of solving the problem is to have the ‘forms’ of the external object causally transferred into the animal in the process of perception. Once inside the animal, the forms can be discriminated and reacted to ‘automatically’ by animals with no intellect, and raised to consciousness, described and reasoned about by animals that do have intellect. (Today we would describe these things as ‘transferring and processing encoded information’. More on this below in section XII.)

According to Aristotle, every case of perception involves four key elements: an object perceived, a medium that causally connects the object to a sense-organ, the sense-organ itself, and the central faculty of sensation (the *sensus communis*). Perception, in each case, is a causal process in which a form is transferred from the object through the medium into the sense-organ and from there to the region of the heart. (Today, of course, we would say it goes to the brain.) The form in question

is the perceived quality, which initially is actualized in the object, but not the sense-organ. Aristotle describes it as 'the power of acting upon the sense-organ' thereby becoming actualized in the organ, which previously had that form only potentially. This 'power of acting' is a result of what today would be called the 'microstructure' of the object of perception. For Aristotle this would be the specific combination of earth, air, fire and water that composed the object in question. (We can replace this today with our own account from physics and chemistry.)

Aristotle describes the perceptual process as 'receiving the form without the matter':

Generally, about all perception, we can say that a sense is what has the power of receiving into itself the sensible forms of things without the matter, in the way in which a piece of wax takes on the impress of a signet-ring without the iron or gold.

(*De An.* 424a 18–20)

Thus, before the signet-ring makes the impression, the ring has a particular shape which the wax does not have. Afterwards, the wax has taken on the shape, but not the iron or gold of the ring. Analogously, prior to perception, the object has a form which the sense-organ does not have. Afterwards, the organ has taken in the form of the object without its matter.

The paragraphs below contain a closer look at each of the four components of perception – object, medium, organ, perceptual centre – and the processes in which they engage. Although all the senses are dealt with, vision is used as the prime example, with the others covered in less detail.

IV. THE OBJECT OF PERCEPTION

As indicated above, Aristotle assumes that the objects of perception are external things in the world (therefore, *not* 'sense-data' or other internal, 'subjective' entities). Strictly speaking, what are perceived are the 'sensible qualities' of the external objects. Aristotle divides such qualities into two kinds – those which can be perceived by one sense only and those which can be perceived by more than one sense. The former qualities he calls 'special objects', the latter 'common sensibles' (*De An.* 418a 11–19).³ The special object of sight is colour, that of hearing is

sound, that of taste flavour, and that of smell odour. Touch has several special objects, including, for example, texture and temperature. The common sensibles, which can be perceived by more than one sense, are motion, rest, number, figure and size.

Each single sense is unerring when it comes to the presence of its special object. It 'never errs in reporting that what is before it is colour or sound (though it may err as to what it is that is coloured or where that is, or what it is that is sounding or where that is)' (*De An.* 418a 14–16, parenthetical material in original).

The senses are unerring about the presence of their special objects because the sense-organs are *completely passive and highly selective*. Nature has so constructed sense-organs that they passively take in the appropriate forms when acted upon by the sensible qualities of objects in the environment. Thus, the ears take in only sounds, the nose only odours, and so on. Once the internalized form reaches the region of the heart (the perceptual centre), however, the animal – using the faculty of *phantasia* (see section IX below) – *interprets* it as a perception of a certain sort, and this process of interpretation can be mistaken.

The sensible qualities of external objects result from their particular 'microstructures' of earth, air, fire and water. As Theodore Tracy explains:

The material objects surrounding the animal and constituting its environment are, as we have seen, composed of earth, air, fire and water blended in the fixed proportions demanded by the nature or form of each object. The form of each object, then, is contained or embodied in the material elements so blended, since it is the principle which fixes their proportions and determines their structure in the total blend. The nature or form of each object, therefore, is manifest materially in the elemental structure of its body. Aristotle's problem is to explain how the animal can assimilate the forms of these objects without their proper matter, so that it becomes aware of the objects and can distinguish one from the other.

(Tracy 1969, p. 201)

Aristotle views the basic elements (earth, air, fire, water) as combinations of four causal factors – the hot, the cold, the moist and the dry. These have the power of stimulating responses

in animals, and when blended in various proportions in objects they constitute the active causes of sensation, that is, the sensible qualities of the objects. (See, e.g. *Meteor.* 384b 24–385a 4.)

And since the particular combination of sensible qualities possessed by each material object depends upon the proportion in which its ingredients are blended, i.e. upon its form, this particular combination of sensible qualities, when assimilated by the animal, will at the same time convey the form of the object, enabling the animal to distinguish it from other objects.

(Tracy 1969, p. 202)

To summarize our account of the object of perception: it has a specific microstructure which gives it certain causal powers – sensible qualities – which act upon the sense-organs of animals.

V. COLOUR

As an example of 'microstructure analysis', let us consider Aristotle's account of the nature of colour. Vision is somewhat more complex than the other senses, however, because it requires a fifth item beyond the usual foursome of object, medium, sense-organ and perceptual centre, namely light. To explain light, Aristotle introduces an additional nature or 'power', which he calls 'the transparent' or 'the diaphanous'. This does not have an independent existence, but is always found in other things, most especially air, water, and the eternal fifth element that comprises the highest heavenly body. All bodies contain the diaphanous to some extent. (See *De An.* 418b 5–10 and *Sens.* 439a 20–5.) Now light is simply the activity of the diaphanous when in the presence of fire. When fire is not present, the diaphanous is only potentially active. This is darkness.

In a transparent body such as air or water, when fire is present it activates the diaphanous, which is then visible as 'brightness' or 'daylight'. This creates the proper medium in which to see colour. It even creates a colour within such a medium, as can be seen in the atmosphere or the sea.

In a body with definite boundaries, the diaphanous is blended in with other components in various proportions, depending

upon the nature of the body in question. The proportion of the diaphanous in the body causes the colour that it has (*Sens.* 439b 9–10) – that is, it causes the body’s power of acting upon the eyes of animals through a transparent medium in the presence of light. The proportion of the diaphanous at the surface of the object causes the colour that an animal sees when looking at the object. If the internal proportion of the diaphanous were different, the inside of the object would be a different colour from the surface.

When the proportion of the diaphanous is highest, the object is white; when it is lowest, it is black. All the other colours are caused by proportions that lie between the two contraries. In chapter 3 of the *De Sensu*, Aristotle considers three theories of how the various proportions can be created: (1) very tiny patches of white and black occur side-by-side mixed in various proportions; (2) black and white layers appear ‘through’ each other like the paint in some works of art; and (3) the black and white matter is thoroughly blended so that the very tiniest speck has the same colour as every other part. At the end of that chapter, he appears to opt for the third of these theories.

Aristotle also provides detailed accounts of other sensible qualities such as sound, flavour and odour. In each case, the ‘microstructure’ of the object in question gives it the power to act upon sense-organs through an appropriate medium. Also in each case, the sensible qualities occur as intermediates on a continuum between two opposites. For sound, the opposites are high pitch and low pitch; for flavour and odour (which is related to flavour) they are sweet and bitter. Touch has a number of contrary pairs, including, for example, hot and cold, moist and dry, rough and smooth.

VI. THE MEDIUM

Having considered the *object* of perception, including an example of ‘microstructure’ that accounts for the sensible qualities of the object, we may now move on to discuss the medium.

According to Aristotle, in *all* cases of perception a medium is necessary. In the case of vision, for example:

The following makes the necessity of a medium clear. If what has colour is placed in immediate contact with the

eye, it cannot be seen. Colour sets in movement what is transparent, e.g. the air, and that, extending continuously from the object to the organ, sets the latter in movement.

(*De An.* 419a 11–15)

Democritus claimed that vision requires no medium at all; and indeed, if the space between us and 'the vault of the sky' were absolutely empty, he said, we could distinctly see an ant crawling on it. Aristotle objected that 'it is indispensable that there be *something* in between – if there were nothing, so far from seeing with greater distinctness, we should see nothing at all' (*De An.* 419a 19–21).

This case, and any one in which the object of perception is at a distance from the animal, can be explained by Aristotle's principle of 'no action at a distance'. (See *Phys.* VII, 2.) But what about cases in which the object perceived is actually *in contact* with the animal – cases of touch or taste? Why should a medium be necessary here? And what is the 'medium' anyway? Aristotle's answer is that the *real* organ of perception in these cases is not the skin or flesh, but the heart or the region of the heart that he says contains the *sensus communis* or 'primary sense faculty'. Also, he speculates on the possibility that in water two bodies 'in contact' actually always have a thin film of water between them; and in air two bodies 'in contact' are actually separated by a thin film of air or moisture (*De An.* 423a 22–b 11).

Each sense, then, functions via a medium between the object and the sense-organ. That medium must be so structured that it has the potential to take on the forms of objects in contact with it and transfer them to sense-organs also in contact with it. For vision, the medium must be a transparent one containing light; for sound it is air or water; for smell also air or water; and for taste and touch the flesh itself is the medium (or possibly a thin film of water or air).

VII. THE SENSE-ORGAN

Much has already been said about the nature of a sense-organ. In particular, it must be so structured that it can potentially take on many different forms from the objects of perception. In effect, the organ is a 'passive patient' ready to be acted upon through an appropriate medium by an appropriate quality of an

object. Such actualization of potential is dramatically described by Abraham Edel as follows:

materials are so organized at a given stage that only some precipitating or moving cause is required for the activity or actuality to be realized in a given determinate shape or form. It is, as it were, the shape of what is to come, all set and ready to go in the constitution of the present.

(Edel 1982, p. 83)

But how can anything be so constituted that it can take on many different forms? Aristotle, of course, uses the analogy of wax taking on the impress of a signet-ring; but this is a mere analogy. His more specific and informative answer is that each sense can be viewed as a 'mean' lying between opposites and able to change in the direction of either (*De An.* 424a 4–9). If the organ of touch is midway between hot and cold, then something hotter can make the organ hotter too, while something colder can make it colder. Touch, therefore, can discriminate a whole range of temperatures between hot and cold. Each sense can be viewed as such a mean.

Because the sense is in form a [mean], a single equilibrium which responds in one direction or another according to the quality presented and then returns to its original 'middle state' when the stimulating cause is removed, the sense organ is capable of 'judging' between one quality and another. . . . Like the balance arm of a scale, it constitutes one and the same standard that responds now one way and now another, thus registering the differences in the objects that move it.

(Tracy 1969, p. 207)

Each sense also has important limitations, however, for if the object perceived has a quality that is too extreme, it can damage or destroy the sense organ (*De An.* 424a 28–32). This could happen, for example, if an animal touched something too hot, or looked at something that was too bright.

VIII. THE *SENSUS COMMUNIS*

Even though each sense, being a 'mean', can distinguish different qualities within a certain range, it cannot distinguish the

'special objects' that belong respectively to the *other* senses. Thus, sight cannot distinguish or even detect smells, tastes, sounds, and so on; and a similar point can be made about each of the other senses. Because this is so, each sense, considered by itself, is isolated from the others. This isolation must be resolved and the senses integrated if the animal is to be a whole organism, rather than a disjointed set of parts or faculties. How is this integration accomplished? According to Aristotle, it is achieved via the *sensus communis* or 'primary faculty of perception'. (See, for example, *Mem.* 450a 11–13; and *De An.* 426b 8–21.) As J. L. Ackrill describes it:

If an animal is to act discriminatingly to its environment, moving to get food and to avoid harm (the point and purpose of sense perception), information about its environment must be conveyed to a unitary centre which can receive and coordinate the input from the different senses, and which can initiate the necessary reactive movements. Aristotle argues persuasively that the very notion of an animal – a single, self-contained mobile organism – requires there to be such a single centre (which he thinks to be the heart) at which all perceptual chains terminate and all reactive chains begin.

(Ackrill 1981, p. 67)

According to Aristotle, when a form is transferred from a medium into a sense-organ, it becomes a percept (*aisthēma*) – Aristotle sometimes calls it a 'movement' or 'change' (*kinēsis*) or an alteration (*alloiosis*) – which is transferred through the body (probably in the blood) to the region of the heart, where the *sensus communis* faculty is located. Thus according to Aristotle 'actual perception is a motion through the body in the course of which the sense is affected in a certain way' (*Phys.* VII, 2, 244b 11).

The *sensus communis*, being the primary perceptual faculty, receives percepts (*aisthēmata*) from any of the sense-organs, then discriminates and 'judges' them: 'to perceive is to judge, and it is possible to judge rightly or wrongly; thus in regard to perception . . . rightness and wrongness must be possible' (*Top.* II, 4, 111a 16–17).

In animals without intellect, the entire process (including the discriminating or 'judging') is automatic – resulting from the

natural physiology of the animal and the particular physiological state that it is in at the time. The information processed in such a case is not propositional, since there is no language capacity in such an animal. In animals *with* intellect (and therefore language), on the other hand, the discriminating and judging process can include or generate various linguistic entities such as beliefs and knowledge.

IX. THE FACULTY OF *PHANTASIA*

The discrimination and judging that occur in the region of the heart are accomplished by the faculty of *phantasia*. This crucial cognitive faculty, according to Nussbaum (1978, Essay 5), has normally been misunderstood and incorrectly explained by commentators on Aristotle. For this reason, it is worthwhile here to summarize Nussbaum's very persuasive account of the nature of *phantasia*.

Commentators usually assume that *phantasia* – which they typically call ‘imagination’ – is just the capacity to retain and manipulate perceptual traces (*phantasmata*) – typically called ‘images’. These ‘images’ – or, better, ‘phantasms’ – are faint or ‘decayed’ percepts that linger in an animal after perception. But this retention and manipulation of perceptual traces is only *one* of the capacities that Aristotle attributes to *phantasia* (he uses phantasms, for example, to help explain memory, dreams and hallucinations). He also uses the term *phantasia*, however, in contexts where images make no sense (Nussbaum 1978, p. 223). Most commentators, it seems, have mistakenly fastened upon the ‘image’ passages (like *De An.* III, 3) and construed them as Aristotle's canonical theory of *phantasia*. In reality, he has no canonical theory, but rather describes *phantasia* as playing several different roles.

Nussbaum notes that Aristotle's use of the term *phantasia* ‘seems to be closely tied to his usage of the verb [*phainesthai*, ‘appear’] and [this] suggests a very general interest in how things in the world appear to living creatures’ (ibid., p. 222). Thus, ‘the most fruitful approach in determining what is meant [by *phantasia* and *phantasma*] in any given context is always to remain aware of the connection with the verb *phainesthai* and to find images only where there is concrete evidence of their presence’ (ibid., p. 231).

When we follow Nussbaum's suggestion, and note the role of *phantasia* in perception and action contexts (like *De An.* III, 9–11 and *De Motu Animalium*), we discover that no images are needed to make sense of these passages, and indeed some of them would become nonsense if so interpreted. Instead, *phantasia* in these passages plays the role of 'the faculty in virtue of which the animal sees his object as an object of a certain sort' (Nussbaum 1978, p. 255). Thus:

We are always passively receiving perceptual stimuli; but when we actively focus on some object in our environment, separating it out from its context and seeing it as a certain thing, the faculty of *phantasia*, or the *phantasia*-aspect of *aisthesis*, is called into play.

(Nussbaum 1978, p. 259)

Since how something appears to an animal depends, in part at least, upon its own point of view, desires, history, and so on, Aristotle's inclusion of *phantasia* in the process of perception commits him to the view that *perception is a fundamentally interpretative process*. As Nussbaum puts it, for Aristotle there is 'no distinction . . . between the given, or received, and the interpreted' (ibid., p. 261). Of course, whenever an animal is awake, the heart region continually receives *aisthēmata* that are passively (and infallibly) taken in by the sense-organs. But unless they are interpreted by *phantasia*, the perceptual stimuli are not seen *as* anything – they have no 'meaning' or significance to the animal who has them.

If, following Nussbaum's suggestion, one rejects the view that the 'image' interpretation of *phantasia* is canonical, and if instead one looks at each context to see what role *phantasia* actually plays, one finds at least three different capacities:

1. The capacity to interpret percepts and thereby perceive an object *as* an object of a certain sort.
2. The capacity to retain perceptual traces after the object of perception is no longer present, plus (in some animals, at least) the ability to manipulate and combine them in various ways.
3. The capacity to interpret perceptual traces and their combinations representing possible or actual objects and states of affairs.

Aristotle calls all of these things *phantasia*; and at times it is

unclear which one he is using or discussing. Sometimes, however, he calls the first kind 'sensitive' *phantasia* and the third kind 'deliberative'. The first kind, he says, is shared by all animals, even the 'imperfect' ones which have no sense but touch (*De An.* II, 433b 31–434a 6). Only animals with intellect, however, have the third kind of *phantasia*. (Aristotle explains in *A. Pst.* II, 19 how the perceptual traces come to be interpreted the way they are, but this issue need not concern us here.)

Not all animals, according to Aristotle, have the second kind of *phantasia*. Thus in *De An.* III, 3 he says 'it is not found in ants or bees or grubs' (428a 10). It is this kind of *phantasia* that one could most reasonably call 'imagination', since it involves having and manipulating 'images' (phantasms). But even this use of 'imagination' is misleading, since the 'images' include perceptual traces of smells, sounds, flavours and other things that are not much like 'pictures in the mind'.

The kind of 'deliberative' *phantasia* discussed in *De An.* III, 11 seems to be a combination of types 2 and 3 above, requiring both the manipulation *and* the interpretation of phantasms. Presumably, it is this kind of *phantasia* that, according to *De An.* III, 3, is combined with 'judgement' to yield 'thinking' (427b 28–9). Thinking, then, would involve two things:

1. combining and manipulating interpreted phantasms in order to envisage or imagine various objects and states of affairs; and
2. 'judging' the imagined things by asserting, denying, inferring, and so on.

This account of thinking commits Aristotle to the view that thinking requires the presence of phantasms. Thus in *De An.* III, 7 he says, for example: 'To the thinking soul images [i.e. phantasms] serve as if they were contents of perception. . . . That is why the soul never thinks without an image' (431a 15–17). And also: 'The faculty of thinking then thinks the forms in the images' (431b 2).

X. SENSE-PERCEPTION – A 'CRITICAL' FACULTY

The above account of *phantasia* explains why Aristotle considers perception and thought to be 'critical' faculties that 'discriminate'. (See, e.g., *De Motu* 6.) Perception includes the

first kind of *phantasia*, which discriminates one object from another by interpreting it *as* an object of a certain sort. Thinking, on the other hand, includes the third kind of *phantasia*, which discriminates by interpreting phantasms *as* representing certain sorts of objects or states of affairs.

Since the present article is concerned with sense-perception, rather than thought, let us analyse in more detail the discriminating aspects of perception, and leave discussion of thought to another occasion.

Even the simplest animals have sense-perception. Indeed, this is how they are distinguished from plants. Let us start by considering a very simple animal, an 'imperfect' one (as Aristotle would say) which has only the sense of touch. How does it discriminate among the objects in its environment?

First of all, since it has *only* touch, it automatically singles out only those objects with which it is in contact, for it cannot sense objects at a distance. Second, as was said above, 'the sense-organs are *completely passive and highly selective*. Nature has so constructed sense-organs that they passively take in the appropriate forms when acted upon by the sensible qualities of objects in the environment.' Thus the organs of touch are so constituted that they fail to detect – and they consequently automatically eliminate – such things as colours, sounds and odours as means of discriminating objects. The *sensus communis* of an 'imperfect' animal, therefore, receives only 'touch-percepts' like hot, cold, dry, moist, and so on.

It follows, then, that even before an 'imperfect' animal employs the faculty of *phantasia*, its passive sense-organs have automatically selected from the environment only objects in contact with the animal which have such properties as hotness, coldness, dryness, wetness, and so on. So a significant amount of 'discrimination' has already been achieved. In addition, however, the faculty of *phantasia* makes a further discrimination. At the very least, it determines which objects are pleasant to the animal and which are painful, as well as which ones are food and which ones are non-food:

If any order of living things has the sensory [faculty], it must also have the appetitive . . . now all animals have one sense at least, viz. touch, and whatever has a sense has the capacity for pleasure and pain and therefore has pleasant

and painful objects present to it, and wherever these are present, there is desire, for desire is appetite of what is pleasant. Further, all animals have the sense for food (for touch is the sense for food; the food of all living things consists of what is dry, moist, hot, cold, and these are the qualities apprehended by touch).

(*De An.* II, 3, 414b 1–8)

When a touch-percept, then, arrives in the region of the heart, sensitive *phantasia* interprets the object as being pleasant or painful, food or non-food. Now this does *not* mean that the animal must employ ‘concepts’ like ‘pleasant’ or ‘non-food’; and indeed, according to Aristotle, this is not possible because the animal in question has no intellect. It need only mean that the percept causes pleasure or pain which leads the animal to pursue or avoid the object in a characteristic way. Such an interpretation of Aristotle’s point is confirmed by the following passage:

when the object is pleasant or painful, the soul makes a sort of affirmation or negation, and pursues or avoids the object. To feel pleasure or pain is to act with the sensitive mean [i.e. with the *sensus communis* in the region of the heart] towards what is good or bad as such. Both avoidance and appetite when actual are identical with this.

(*De An.* III, 7, 431a 8–12; bracketed material added here)

So the faculty of sensitive *phantasia*, then, is the capacity to ‘feel pleasure or pain’ and thereby initiate characteristic kinds of pursuit or avoidance. If the pursuit activity initiated is ingestion, then the object has been interpreted as food; if the avoidance activity initiated is flight, then the object has been interpreted as an enemy; and so on. Now, nature has so constituted animals that they get pleasure from things that help them flourish and pain from things that harm them:

Each animal is thought to have a proper pleasure, as it has a proper function; viz. that which corresponds to its activity. If we survey them species by species, too, this will be evident; horse, dog, and man have different pleasures; as Heraclitus says, ‘asses would prefer sweepings to gold’; for food is pleasanter than gold to asses. So the pleasures of creatures different in kind differ in kind.

(*EN* X, 5, 1176a 4–8)

But what precisely is it to 'feel pleasure and pain'? In the *Physics* (247a 15), Aristotle says 'pleasures and pains are alterations of the sensitive part'; and in the passage cited above, he says: 'To feel pleasure or pain is to act with the sensitive mean towards what is good or bad as such.' Thus, to feel pleasure or pain is to have, in the region around the heart ('the sensitive mean'), an activity which initiates some sort of pursuit or avoidance of what is good or bad for the animal. Nature has endowed each animal with just the right physiology to react towards the good and bad in the proper way – to feel just the right pleasures and pains, and thereby pursue and avoid just the right things in just the right ways. With this 'instinct' (as we would call it) nature helps animals to flourish. (The story gets much more complicated when animals, like humans, acquire intellect and reasoning, and so become capable of a wide variety of pleasures, pains, pursuits, desires, and so on. These matters do not concern us here.)

To summarize what we have said about sense-perception: the sense-organs send percepts to the region of the heart; these 'motions' or 'alterations', in turn, combine with other physiological processes and states to produce characteristic kinds of pursuit or avoidance activities; these activities result from the physiological endowment of the animal, together with the particular physiological states and processes that it happens to have at the time – other perceptions, other pains and pleasures, and so on. In this way, it 'discriminates and judges' objects in its environment from its own point of view, pursuing some and avoiding others, ingesting some and rejecting others, and so on. The more complex animals have more kinds of perception and more sophisticated pursuit and avoidance behaviours.

XI. THE INTENTIONALITY OF PERCEPTION

At this point in our discussion, it seems appropriate to say something about the so-called 'intentionality' of perception. This term is an ambiguous one and seems to be used in different ways by different authors. Three of the standard uses concern the *privacy*, the *subjectivity* and the 'aboutness' of intentional states and processes. Let us discuss each of these in turn.

Privacy: An intentional state or process is said to be 'private'

because it is impossible for any other being to have the *very same* one. Thus, *my* perception of a particular object at a particular time is different from *yours*, even if we are perceiving the same object at the same time, and even if yours is ‘just like’ mine. They are numerically different because yours is within you and mine is within me. You cannot ‘jump inside my skin’ and have my perceptions. Even if you could somehow ‘perceive my perceptions’, or receive percepts from *my* sense-organs, the resulting perceptions would be different, since mine would be in my perceptual centre and yours would be in yours.

Given Aristotle’s account of perceptions, they are indeed private in this sense. Thus, perceptions within one animal could *not* be within another, although different animals could have similar ones. Even in a case of ‘Siamese twins’, if there were separate heart regions receiving separate percepts, then each of the joined animals would have its own private perceptions. If, on the other hand, there were only one heart region, the so-called ‘twins’ would actually be a single – though very deformed – animal. In this case, though, there would not be *two* animals sharing the same perceptions. (See *De Gen. An.* IV, 4, 773a 8–12.)

Subjectivity: Intentional states and processes are said to be ‘subjective’ because they essentially involve the animal’s own point of view or interpretation of the world. Now this is certainly true of perception as Aristotle describes it, since it involves the faculty of sensitive *phantasia*. This rules out the possibility of an ‘innocent eye’ which views the world without interpretation. Given Aristotle’s theory, an animal’s perceptions are what they are – play the specific role that they do play – pick out and ‘judge’ what they do ‘judge’ – because they are interpreted from the animal’s own point of view – because they are part of the unique configuration of internal states and processes that result from the animal’s own history and position in the world.

‘Aboutness’: The key to intentionality, according to some philosophers (see, for example, Searle 1979), is ‘aboutness’, the ability of an internal state or process to ‘be about’ or ‘directed at’ something other than itself. Perception is intentional in this sense, for even though it is *internal* to the animal, it is ‘about’ or ‘directed at’ *external* objects.

As Searle (1979) has pointed out, this sense of ‘intentionality’ can be explained in terms of ‘conditions of satisfaction’. Thus, if I seem to perceive an object in my environment, the would-be

perception could not be genuine unless there really is such an external object there causing the perception. Again, if an animal desires to eat a piece of meat which it perceives nearby, that desire has the condition of satisfaction that the animal eat the meat in question.

Aristotle's account of perceptions makes them intentional in this sense too. Thus, when the heart region of an animal receives a percept from an external object, and *phantasia* 'judges' the object to be food, this perception has the condition of satisfaction that there really is such a food-object there causing the percept. And when this perception causes a desire for the food; the resulting desire has the condition of satisfaction that the external object be eaten by the animal. Thus, the perception and desire really are 'about' or 'directed at' the external object.

It is, perhaps, of interest to note here that Aristotle's theory of perception is 'purely physiological' and does not require the existence of Cartesian 'spirit' or 'mindstuff'. Nevertheless, it is able to account for 'mental' properties like privacy, subjectivity and 'aboutness'. This is a notable philosophical achievement that contemporary materialists would do well to investigate. (See Bynum 1985.)

XII. ARISTOTLE'S THEORY IN THE TWENTIETH CENTURY

The above discussion has shown that Aristotle developed a very sophisticated theory of perception with great power and subtlety. It was carefully worked out in remarkable detail, and fully integrated with the rest of his philosophy and psychology, as well as his physics and physiology.

As a piece of physics or physiology, of course, his theory is now quite outdated; but as a piece of philosophy and psychology it remains a significant contribution to on-going research. This is especially so because one could easily 'update' it by replacing the heart with the brain; blood vessels with nerves; earth, air, fire and water with the elements of modern chemistry; and so on. The result would be a powerful causal theory of perception integrated with modern science.

One of the most important aspects of such a theory would be a contemporary version of 'receiving the form without the matter'. In what sense do causal traces of sensed objects contain

or convey information about those objects, and how can such traces 'represent' the objects?⁴ Answers to such questions might be developed by combining Aristotle's theory with modern information theory and computer science; and, indeed, a number of scholars have begun to think along these lines, as indicated by the following passages:

Electrical impulses carried over a telephone wire are not much like the audible sounds they convey, but such impulses do correspond to sounds in a certain way. Again, coded messages and translations may not look at all like their originals, but they can carry the same content The idea is now familiar that in sense-perception the changes that go through the nervous system to the brain convey in a sort of coded form the characteristics of perceived objects, messages which the brain decodes. This may be regarded as a refined version of Aristotle's account.
(Ackrill 1981, pp. 66–7)

The nonmaterial form found in Aristotle's view, which is serially transferred until it is in a state useful in sensation and perception, is discovered again in current theorizing. We speak of information instead of form and of encoding and decoding instead of substances taking a form without themselves being changed in the process. But we still conceive of sensation and perception as a process in which the form (information) is preserved as it passes from one box in the flow chart to another.
(Baumrin 1975, p. 258)

Aristotle's theory of perception, it is clear, offers much more than something of 'merely historical interest'; and, indeed, it might even contribute to new developments in psychology, robotics, information theory, and related fields.⁵

NOTES

- 1 The analysis is more troublesome when applied to change of *substance*, but this problem need not concern us here (see Edel 1982, pp. 58–9).
- 2 All quotations of Aristotle's works are from *The Complete Works of Aristotle: The Revised Oxford Translation* (see 'References' below).

A NEW LOOK AT ARISTOTLE'S THEORY OF PERCEPTION

- 3 He also has a third kind of quality which he calls an 'incidental sensible', but such qualities are not actually perceived in the strict sense. Thus, the quality 'being the son of Diaries' is not perceptible, although one could perceive the whiteness of a thing which happened incidentally also to be the son of Diaries (*De An.* 418a 20-3).
- 4 Such questions plunge us into thorny topics regarding contemporary 'causal' and 'representational' theories, but space does not permit us to investigate them here. See Bynum 1985 for an examination of some of these issues.
- 5 The present paper owes much to Baumrin 1975 and 1976.

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III

ARISTOTLE ON KINDS OF THINKING

Malcolm F. Lowe

A widespread, and perhaps currently prevalent, view of Aristotle's discussion of the mind in *De An.* III, 4 is that he assimilates the process of thinking as far as possible, if not totally, to that of sensation.¹ It will be argued in the following, however, that Aristotle is in fact concerned to explain where thinking *differs* from sensation.² When the chapter is read as a whole, his aim can be seen to be to distinguish between two kinds of thinking: one which is closely related to sensation, and one which is a process peculiar to mind. These may be termed 'apprehensive thinking' and 'autonomous thinking' respectively. The latter, as it appears from *De An.* III, 7-8, includes both contemplative thinking and thinking about concrete objects in their absence; furthermore, it employs the imagination where apprehensive thinking employs sensation.

I

From the commentaries (both ancient and modern) on *De An.* III, 4, one might receive the impression that it is a collection of loosely connected observations about thinking. In fact, however, it is a single continuous discussion organized in three parts in a typically Aristotelian manner. Aristotle first starts with a view on thinking that is found widely among his predecessors, and he shows that various objections to it can be raised (429a 10-b 9). Then he introduces a distinction that enables one to see to what extent the widespread view is correct and to what extent it needs to be modified (429b 10-22). Finally, he mentions and disposes of two problems, showing that they do not constitute difficulties for his own account (429b 22-430a 9).³

The common view of most of Aristotle's predecessors is precisely that sensation and thinking are processes of an entirely analogous kind, if indeed they are distinct processes at all. This is made clear by Aristotle both at the beginning of *De An.* III, 3 and at greater length in the introductory discussion on his predecessors' views in the first book of the *De Anima*. In *De An.* I, 2, he discusses various philosophers who supposed that all 'knowing and sensing' (404b 9) come about through the action of like upon like (such as Empedocles, 404b 11–15, and Plato, 404b 16–27, and perhaps Heraclitus, 405a 25–8), or who did not even distinguish between mind and soul (Democritus, 404a 27–8), or who did not distinguish clearly between them (Anaxagoras, 404b 1–3 and 405a 13–16). Towards the end of the same chapter, Aristotle makes a more general statement on the same lines (in which he reflects his predecessors' attitude by *himself* using 'sensation' and 'knowing' virtually interchangeably):

All indeed, it may be said, define the soul by three things – by movement, sensation and the incorporeal – while each of these is traced back to the principles. That is why those who define it by knowing also make it an element⁴ or make it out of the elements,⁵ saying much the same as each other, with one exception,⁶ for they say that knowing is of the like by the like.⁷

(405b 11–15)

Aristotle comes back to this widespread view at the beginning of *De An.* III, 3, the chapter immediately preceding the one with which the present paper is chiefly concerned:

thinking and understanding [*φρονεῖν*] seem to be a kind of sensing, for in both of them the soul judges and comes to know some existing thing. And indeed, the ancients say that understanding and sensing are the same.

(427a 19–22)

After citing Empedocles and Homer, as also in *De An.* I, 2, he continues:

For all of them suppose that thinking is corporeal like sensing, and both sensing and understanding are of the like by the like, as we also explained in our introductory discussion.

(427a 26–9)

But they are all wrong, he adds. Sensation belongs to all animals, but understanding only to some (427b 6–8). Thinking belongs only to humans; moreover, it can be true or false, whereas sensation of its proper objects is always true (427b 8–14).

II

This, then, is the background to *De An.* III, 4. In the latter, having stated that his aim is to examine what distinguishes the part of the soul that is concerned with knowing and understanding and ‘how thinking ever comes about’ (429a 10–13), Aristotle opens his account of thinking with the statement: ‘If indeed thinking is like sensing, it would be either some way of being affected by the object of thought or something else of this sort’ (429a 13–15). In view of the earlier discussions already quoted, Aristotle’s ‘If indeed . . . would be’ (εἰ δὲ . . . ἂν εἴη) can be taken as a hint that thinking is *not* entirely like the process of sensation.⁸ He continues, however, by pursuing at length the consequences of assuming that the two processes are analogous, namely that both consist in the psychic faculty concerned being affected by its object and thereby receiving some form. In *De An.* II, 12, when talking of sensation, he notes that the senses are affected only in one respect by their objects, whereas in another respect they are *unaffected*:

In general, regarding every sense, it must be taken that the sense is that which can receive the sensible forms without the matter, as wax receives the imprint of the ring without the iron or gold, and it takes the imprint of gold or of bronze, but not *qua* gold or bronze. Similarly too in each case the sense is affected by that which has colour or flavour or sound, but not *qua* what each of those is said [to be], but *qua* a certain feature⁹ and according to the proportion.¹⁰

(424a 17–24)

Accordingly, in pursuing the supposition that thinking is like sensation, Aristotle continues his discussion in *De An.* III, 4 with the statement:

[The mind] must then be unaffected, but capable of receiving the form, and potentially such as it, but not

ARISTOTLE ON KINDS OF THINKING

[identical with] it; and as that [part of the soul] which can sense is to the objects of sensation, so must the mind be similarly to the objects of thought.

(429a 15–18)

The mind, however, thinks all things, according to Aristotle. This enables him quickly to find a *first* important objection to regarding thinking and sensation as analogous processes, namely that the mind can have no organ in the body:

[The mind] must then, since it thinks all things, be unmixed, as Anaxagoras says, in order that it may rule, that is, in order that it may know; for the intrusion of anything foreign [to it] hinders and obstructs it; hence it has no other nature than this, that it is potential. What is called the mind or the soul . . . is therefore, prior to thinking, actually none of the things that exist. Hence nor is it reasonable that it should be mixed with the body, for it would then be of a certain kind, either hot or cold, or there would even be an organ [of the mind] as with the sensitive [part of the soul], but in fact there is none.

(429a 18–27)

Moreover, Aristotle continues, it is a matter of *observation* that the manner of being affected and unaffected is not the same in the cases of sensation and thinking. This provides a *second* objection to the failure of many of his predecessors to distinguish between their modes of operation:

But that the sensitive and thinking [parts of the soul] are not unaffected in the same manner is clear from the sense-organs and the sense. For the sense is not able to sense following a powerful object of sensation, e.g. [to sense] sound following loud sounds, not to see or smell following strong colours or smells. But when the mind thinks a powerful object of thought, it thinks the weaker ones not less but rather more [effectively]. For the sensitive [part of the soul] does not exist without a body, but the mind is separate.

(429a 29–b 5)

Yet a *third* objection is that although initially both faculties need the stimulus of external objects to start working, the mind

eventually develops to the stage where it can operate autonomously (unlike the senses).

And when the mind has become each of the things in the way that one who actually knows is said to do so (and this happens when he can actualize [his capacity] by himself),¹¹ [the mind] exists potentially then too in a way, although not in the same way as prior to thinking or discovering: and then it can think by¹² itself.

(429b 5–9)

Thus, starting from the view widespread among his predecessors that thinking is thoroughly analogous to sensation, Aristotle has raised three clear objections to that view. The *second* part of *De An.* III, 4 consists of the elaboration of a *distinction* with which to resolve this unsatisfactory state of affairs:

But since a magnitude and what it is to be a magnitude are different, and water and what it is to be water (and so too for many things, but not for all; they are indeed the same for some things), it/one judges flesh and what it is to be flesh either by means of some other thing or by means of some [one] thing in another way. For flesh is not [something that exists] without the matter, but like the snub[nosed] it is a this in a this. It/One judges by means of the sensitive [part of the soul] the hot and the cold and those things of which¹³ flesh is a certain proportion,¹⁴ while it is by means of something else – whether separate or whether related as is a bent line to itself when straightened out – that it/one judges what it is to be flesh.

And again: concerning things existing in abstraction, the straight is as the snub, for [it exists only] with extension; but ‘what it is to be what it was’, if the straight and what it was to be straight are different, is something else – for let it be duality.

It/One judges, then, by means of something different or by means of some [one] thing in a different way. In general, then, [in so far] as things are separate from matter, so also [it is with] what concerns the mind.

(429b 10–22)

The interpretation of this passage hangs upon two crucial points. *One* is whether κρίνει in 429b 13, 15, 17 and 21 means

‘it [i.e. the mind] judges’ (since ὁ νοῦς in b 3 is also the subject of δύναται νοεῖν in b 9 immediately before this passage), or whether it means ‘one judges’ as it was understood by Hamlyn (who translates ‘we judge’) and by J. A. Smith (‘we discriminate’, etc.). The former alternative was adopted by all the extant ancient writers on Aristotle¹⁵ and by Zeller,¹⁶ the latter alternative by the leading recent commentators.¹⁷ My view is that the ancient writers were correct. The *second* crucial point is: what is being referred to by the complex phrases ‘some other thing or . . . some [one] thing in another way’, ‘separate or . . . related as is a bent line to itself when straightened out’ and ‘something different or . . . some [one] thing in a different way’? The unanimous opinion of the writers mentioned, both ancient and modern, is that the reference is to a contrast between two psychic faculties: sensation and the mind. My view is that they are all wrong: rather the formulas are complex because, at the time of writing *De An.* III, 4, Aristotle was *not sure* what faculty other than sensation was involved.¹⁸ Some later passages in the *De Anima*, however, indicate that he eventually concluded that the *imagination* was the faculty concerned. I shall discuss these two points successively.

III

In favour of taking ‘the mind’ to be the subject of ‘judges’ in 429b 13, etc., there are a number of different reasons which, cumulatively, make this interpretation very plausible. There is even some manuscript evidence in its favour. Whereas the usual Greek text of 429b 13, as translated above, is based on the CX group of manuscripts, the EL group has instead ‘the mind also judges flesh and what it is to be flesh either by means of some other thing or in another way’. Of the three differences from the usual text, the relevant one is that κρίνει ὁ νοῦς occurs explicitly. Admittedly, this may be simply an addition prompted by the standard ancient interpretation of the passage.

Even with the usual text, however, there are adequate reasons for taking κρίνει to mean ‘the mind judges’.¹⁹ To begin with – as the ancients realized and Zeller noted – this accords well with the preceding discussion. The statement ‘And when the mind has become each of the things . . .’ (429b 5–9; see above) indeed suggests that there are two kinds of mental process: an

apprehensive process, whereby the mind acquires thoughts in the first place,²⁰ and an autonomous process, which can begin once the mind has acquired thoughts. ‘Judging flesh’ and other things ‘not without matter’ would be the first process, while the ability to ‘judge what it is to be flesh’ and other things ‘without matter’ would be involved in the second process. Since the second process is not directly connected with the ordinary process of sensation, it is no longer a problem if here – unlike the case of sensation – thinking a ‘powerful object of thought’ makes it easier to think the ‘weaker ones’ (429a 29–b 5), see above). And if the mind can judge concrete things ‘by means of the sensitive [part of the soul]’ (429b 14–16; see above), then the mind has no need of an organ of its own with which to acquire thoughts in the first place (as 429a 18–27; see above). Thus this interpretation enables us to see how Aristotle intended to use the distinction between ‘judging flesh by means of the sensitive [part of the soul]’ and ‘judging what it is to be flesh by means of some other thing . . .’ as a distinction between *two kinds of thinking*,²¹ and thereby to deal with *all the three objections* that he raised against the mistaken consensus of his predecessors. Those predecessors were basically right about the *apprehensive thinking* involved in acquiring thoughts in the first place, but ignored or had no explanation for the autonomous thinking that can take place even at times when the mind is not apprehending anything from outside.²²

By contrast, it is difficult to see how Aristotle could have meant to deal with the three objections if κρίνει in 429b 13, etc., is taken to mean ‘one judges’. In particular, it is then implied by 429b 14ff. (see above) that the judging of things ‘not without matter’ belongs entirely and exclusively to the sensitive faculty, making it difficult to see how the mind will be able to acquire thoughts about them at all, although one of Aristotle’s aims in his chapter – as was already noted – is to determine ‘how thinking ever comes about’ (429a 13).

A similar obstacle to understanding κρίνει as ‘one judges’ is provided by the mathematical example (‘the straight’) discussed in 429b 18–20 (see above), because mathematical objects, according to Aristotle, are objects of mind and *not* of sensation. This is clear from two passages in the *Metaphysics* in which Aristotle states that mathematical objects have not sensible but intelligible matter (ύλη νοητή, *Meta.* 1036a 9–12, b 32–1037a

5); although there is a problem of the location of these passages in the text, the doctrine is clearly Aristotelian, as is shown by his distinction between wooden or bronze ‘sensible circles’ and the ‘intelligible circles’ of mathematics (1036a 3–5). In the mathematical case, then, both ‘judging the straight’ and ‘judging what it is to be straight’ are processes conducted by the mind. But Aristotle says expressly that the case of the straight is like that of the snub, and the latter like that of flesh, implying that two kinds of thinking are to be distinguished in all such cases. The distinction between ‘judging something’ and ‘judging what it is to be something’ can thus be reapplied at different levels of thought, as is confirmed by Aristotle’s remark following the mathematical example: ‘In general, then, [in so far] as things are separate from matter, so also [it is with] what concerns the mind’ (429b 21–2; compare Simplicius, ad loc.).

Indeed, Aristotle’s primary example of the distinction – the substance flesh – is itself an obstacle to understanding κρίνει as ‘one judges’ in 429b 10–22, since it is clear enough from what Aristotle says elsewhere that the mind is involved not only in judging flesh in the abstract, but also in judging concrete examples of material flesh *to be* flesh. The evident meaning of the passage from *De An.* II, 12 quoted earlier is (as already noted) that the senses are able to perceive the shapes, colours, flavours and sounds of objects, but not their substance, be it gold, iron, bronze – or flesh. Even if discerning a concrete example of a substance should boil down to discerning a certain combination of sensible qualities, there remains a difference between discerning the various qualities and discerning them to constitute the *appropriate* combination – as opposed to combinations that represent no substance.²³ Accordingly, it makes Aristotelian sense to say that it is the mind that judges a concrete example of a substance *to be* a substance, through acting by means of the senses, and that this is a process which is distinct *both* from the mere sensation of qualities *and* from autonomous thinking about substances and qualities in the absence of external stimuli. But the mind is not restricted to substances, since it ‘thinks all things’ (429a 18; see above).

That the mind has a special relationship to substance is also shown by *De An.* III, 6. The main question discussed here is when thinking is infallible. Aristotle begins with the statement: ‘The thinking of undivided things is among those things about

which there is no falsity, whereas in those things where there is both falsity and truth, there is already a combination of thoughts as constituting one thing' (430a 26–8). After various elaborations and digressions, he concludes:

Assertion as also denial is about something, and all [assertions and denials] are true or false. But not all thought [νοῦς]; rather, that of what a thing is in respect of 'what it is to be what it was' is true, and is not something about something. Rather, just as seeing of its proper object is [always] true, whereas [seeing] whether the white thing is a man or not is not always true, so it is with whatever things are *without matter*.

(430b 26–30)

Despite the obscurities and textual difficulties of this passage and the rest of *De An.* III, 6, the conclusion seems to be clear enough: infallible thinking is the thinking of essences as such, as a special case of thinking concerned with things that are 'without matter'. Moreover, although it may be *possible* to read the passage as compatible with the assumption that there is *only* thinking about things 'without matter', the more natural way to read it is that there is thinking both about things 'not without matter' and about things 'without matter', while infallible thinking is a special case of the latter. This is, then, a further indication that in *De An.* III, 4 both 'judging flesh' and 'judging what it is to be flesh' are concerns of the mind, since it was said there that the difference between the two kinds of judging was connected with the fact that flesh in the concrete is 'not without matter' (429b 12–14; see above).²⁴

Unambiguous confirmation that there is thinking about both things 'without matter' and things 'not without matter' is found in the *third* part of *De An.* III, 4 (namely 429b 22–430a 9, as was distinguished at the outset). Here Aristotle raises two additional problems about the mind and shows that his own account of thinking enables him to dispose of them. The second of these problems is the one relevant in the present context:

Is [the mind] itself an object of thought? For either mind will appertain to everything else, if without reference to anything else it is itself an object of thought, and there is [only] one sort of object of thought. Or it will have

ARISTOTLE ON KINDS OF THINKING

something admixed which makes it an object of thought like the others.

(429b 26–9)

Aristotle's answer is:

It is itself an object of thought, like the [other] objects of thought. For as regards *things without matter*, that which thinks and that which is thought are the same: for theoretical knowledge and that which is thus known are the same. (But the reason why there is not always thinking should be examined.) While in *things having matter*, each of the objects of thought exists [only]²⁵ potentially: thus mind will not appertain to them (for the mind is a potentiality for being such things without matter), but being-an-object-of-thought will appertain to it.²⁶

(430a 2–9)

Regarding this passage, no issue of textual variants or obscurities can hide the fact that Aristotle considers that there is *both* thinking concerned with things 'without matter' *and* thinking concerned with things 'not without matter', inasmuch as the latter things are expressly said to contain objects of thought. Nor is it any objection that he says that material objects contain them *potentially*, since in *De An.* III, 2 he makes it clear that they also contain objects of *sensation* only potentially.²⁷ Thus this passage confirms, first, that in 429b 12ff. – if *De An.* III, 4 is in any way to be read as a coherent whole – it is the mind that both 'judges flesh' and 'judges what it is to be flesh'; and, second, that it is in respect of the apprehensive thinking concerned with material objects that Aristotle is prepared to acknowledge some justice in the tendency of his predecessors to see no difference between thought and sensation.

IV

The second crucial point requiring clarification in *De An.* III, 4, 429b 10–22, was the reference of the phrases 'either by means of some other thing or by means of some [one] thing in another way' (ἢ ἄλλω ἢ ἄλλως ἔχοντι) etc. Both the ancient and the recent commentators took these phrases to be an oblique manner of contrasting sensation and the *mind*. This has an odd

consequence for Zeller and the ancient commentators: that the mind is said to judge things without matter 'by means of' *itself*. The recent commentators freed themselves from this first oddity by supposing Aristotle to say that 'one judges' by means of the mind, but they left themselves with a second and greater oddity: that the mind is sensation existing 'in another way'. Their statements even reveal some unease over this conclusion. For instance, Hicks: 'It may seem strange that intellect should after all only be sense in a different relation' (op. cit., ad loc.)²⁸

My view is that Aristotle used such vague and complex formulas because at the time of writing *De An.* III, 4 this was a problem which he had not solved to his satisfaction. Just as he had invented 'intelligible matter' as a substitute for 'sensible matter' in the case of mathematical objects,²⁹ so also he felt that the mind would need some substitute for sensation in dealing with things 'without matter'. Either the mind would have to employ some other faculty than sensation (ἄλλω), or it would still use sensation but in a different way (ἄλλως ἔχοντι) from its use in apprehensive thinking.

Aristotle's formulations suggest that he was inching towards naming not the mind, but the *imagination* as the required substitute for sensation.³⁰ As is well known, in the *De Anima* and the *Parva Naturalia* he gradually loads more and more functions on to the imagination, it seems, for want of an alternative. At the same time, it is precisely the imagination about which Aristotle is uncertain whether it is a distinct faculty or whether it is an aspect of some other faculty: in *De An.* III, 9, he says of the imaginative part of the soul that it is 'different in its being from all [the other parts], although which of them it is the same as or different from is a considerable problem if one is to posit separate parts of the soul' (432a 31–b 3). Moreover, in trying to distinguish imagination from other psychic activities and faculties in *De An.* III, 3, he both subsumes it broadly under *thinking* (427b 27–9) and defines it roughly in a manner that expressly mentions *sensation*.³¹ Imagination 'would be a motion brought about by actual sensation', but persisting after the moment of sensation; its very name in Greek, he adds, is connected with the word for light and thus suggests a connection with seeing, which is sensation *par excellence* (428b 30ff.; see also 428b 10ff.).

The chapters *De An.* III, 7–8 show that Aristotle eventually

ARISTOTLE ON KINDS OF THINKING

took the plunge and named the imagination (φαντασία) and its images (φαντάσματα) as the needed substitute for sensation. Like *De An.* III, 6, these chapters are disjointed and contain textual problems, but there are passages that establish the point required. For instance, in *De An.* III, 8:

Since there is no object that is separate apart from the magnitudes, as it seems [or; it is commonly held], which are objects of sensation, the *objects of thought* – both those which are spoken of as in abstraction and whatever are dispositions and affections of objects of sensation – are among the forms which are objects of sensation. And because of this, without *sensing* anything one would not *learn* or comprehend anything; and when one *contemplates*, one must simultaneously contemplate an image, for *images* [φαντάσματα] are like *sensations* [αἰσθήματα] but *without matter*.

(432a 3–10)

The first sentence of this passage shows that Aristotle is talking about the objects of thought that are involved in mathematics³² and in natural philosophy.³³ The content of the second sentence can be exhibited simply in a table with two columns.

having matter	without matter
sensations	images
learning	contemplating

In short, the objects of thought involved in mathematics and natural science are learned by means of sensations having matter, while they are contemplated by means of images without matter.

It might seem that this passage already suffices to confirm *all* the conclusions already drawn from *De An.* III, 4. A little more, however, can be added on the basis of the following passage in *De An.* III, 7:

The [part of the soul] capable of thinking, therefore, thinks the forms in images; and just as in *those* what is to be *pursued and avoided* is determined for it, it is also moved – apart from sensation – when it is concerned with images. For instance, *sensing* the beacon,³⁴ it/one recognizes that it is fire, seeing it moving – by means of the common sense –

it/one recognizes that it belongs to the enemy: but sometimes, by means of the *images* or thoughts in the soul, as if seeing, it/one *calculates and plans* future things in relation to present things.

(432b 2–8)

The word ‘those’ near the beginning of this passage may seem in context to refer to ‘the forms’, but its probable reference is to ‘the sensations’ as in 431a 15 (where αἰσθήματα and φαντάσματα occur as in the passage from *De An.* III, 8 quoted previously). The present passage, namely, is the continuation of a passage that begins at 431a 4 and breaks off at 431a 17. (The intervening 431a 17–b 1 belongs rather to *De An.* III, 2 and seems to have been mistakenly inserted here by an ancient editor.) In that earlier passage, the discussion concerns ‘avoidance and desire’ provoked by *sensation* (431a 12) and continues, immediately before the interruption, with the sentences: ‘But to the thinking [διανοητικῆ] soul the images appertain as if sensations. And when it asserts or denies good or bad, it avoids or pursues. Therefore the soul never thinks without an image’ (431a 13–17). Note that the theme of ‘avoids or pursues’ here is picked up immediately in the later passage (at 431b 3; see above). The second sentence of the latter, moreover, distinguishes precisely between the roles of sensation and imagination in influencing human conduct.

Consequently, the passage from *De An.* III, 7 are concerned with the *same* differentiation between the roles played in thinking by sensation and imagination as was found in the passage from *De An.* III, 8. Only, whereas the autonomous thinking concerned was contemplative thinking about mathematics and natural philosophy, here it is ‘calculating and planning’ about concrete objects in their absence. Moreover, although his example here is deliberative thinking, obviously all thinking about concrete objects in their absence will be a similar kind of autonomous thinking.

To sum up, in *De An.* III, 4 and 7–8 Aristotle distinguishes between two basic kinds of thinking: *apprehensive* thinking about things having matter by means of sensation, which is also the process by which the mind first learns, and *autonomous* thinking about things without matter by means of the imagination, which includes *both* the contemplative thinking of

mathematics and natural philosophy and *also* thinking about concrete objects in their absence. In *De An.* III, 6 he makes a further distinction between fallible and infallible thinking, the latter being a special case of thinking about things without matter.

NOTES AND REFERENCES

- 1 With individual variations, this is basically how Aristotle's account is presented in R. D. Hicks, *Aristotle: 'De Anima'* (Cambridge: Cambridge University Press, 1907); W. D. Ross, *Aristotle*, 5th edn (London: Methuen, 1948); D. J. Allan, *The Philosophy of Aristotle*, 2nd edn (Oxford: Oxford University Press, 1968); and D. W. Hamlyn, *Aristotle's 'De Anima' Books II and III* (Oxford: Clarendon Press, 1968). I shall chiefly follow Ross's Oxford text (1956) and Hamlyn's translation. I am grateful (in chronological order) to Professor Hamlyn, Professor John Ackrill, Jonathan Barnes, Julia Annas and Professor Shlomo Pines for their comments on an earlier version of this paper.
- 2 In *De An.* II, 5, Aristotle begins to note differences between sensation and thinking (417b 9–28), but adds (417b 29–30) that a fuller account will be given later. *De An.* III, 4 may be seen as the fulfilment of this promise, especially as there is reason to believe that III, 4 was actually written *before* II, 5: see my 'Aristotle's *De Somno* and his theory of causes', *Phronesis* 23 (1978), 279–91. See also n. 12 below.
- 3 Given that the interpretation to be offered here enables one to see the whole chapter as a typically Aristotelian form of argument, it will not be a serious objection that the occasional phrase or sentence might be interpreted differently in isolation, if the objector does not offer an alternative interpretation of the chapter as a coherent whole. All the more so inasmuch as it will prove possible to give a unified interpretation of *De An.* III, 3–4, 6–8.
- 4 Democritus (fire, 403b 31ff. and 405a 8ff.), Diogenes (air, 405a 21ff.), Hippo (water, 405b 1ff.).
- 5 Empedocles (404b 13–15).
- 6 Anaxagoras, who says that the mind is ἀπαθής (405b 20).
- 7 Aristotle comes back to this view of the soul in his discussions of the nutritive and sensitive faculties as well as of mind. He seeks to determine in what respects like is nourished by like and by unlike (416a 29–b 9), while his account of sensation as a transition from potential to actual reception of sensible forms is also a kind of action by like upon like (see the quotation from *De An.* II, 12 below).
- 8 Other examples in the *De Anima* of an optative in a statement that is about to be refuted are 406a 14ff., 408b 19 and 416a 13.
- 9 ἧ τοιονδί meaning, it would seem, 'qua a certain quality' as

opposed to 'qua the substance' (thus also J. A. Smith in the old Oxford translation of Aristotle).

- 10 For the translation of λόγος as 'proportion', see note 23 below.
- 11 Possibly, instead of 'he', 'his' and 'himself' (as Hamlyn and Smith), the translation should read 'it', 'its' and 'itself': indeed, this is how the ancient commentators read this passage. Alternatively, Paul Moraux, *Alexandre d'Aphrodise: Exégète de la noétique d'Aristote* (Liège: Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège, 1942), pp. 82–3, may be correct in extending the bracket to include the word 'discovering' and making 'he' the subject of 'exists'.
- 12 Or 'about', if Bywater's correction is not accepted; but that the mind can now think autonomously follows from the comparison with the knower (compare note 11 above). The same difference between thinking and sensing is expressed in different words in *De An.* II, 5, 417b 9–28: only through learning and gaining knowledge (417b 12) does the mind reach the level of potentiality/actuality that the sensitive faculty has from birth (417b 16–19); but thereafter thinking can take place autonomously (417b 24), whereas sensation continues to need external stimuli for its exercise (417b 20), because sensation is of the particular and knowledge of the universal (417b 22–3). This statement is probably later as well as fuller than 429b 5–9 (see note 2 above).
- 13 Or (with MS C) 'the hot and the cold, of which'.
- 14 For the translation of λόγος as 'proportion', see note 23 below.
- 15 See Themistius (ed. Heinze) 96, 15–27; Simplicius (ed. Hayduck) 232, 13–30; the 'Greek' Philoponus (ed. Hayduck) 529, 17–26; and the 'Latin' Philoponus (ed. Verbeke) 23, 36–52; likewise Sophonias (ed. Hayduck) 126, 17–127, 11. According to the 'Greek' Philoponus (maybe Stephanus), 529, 17–26 and 530, 5–7, Plutarch and Alexander had adopted the other interpretation; yet contrast Alexander's own *De Anima* (ed. Bruns) 87, 5–23 and also (in the *De Intellectu*) 110, 17–20. Compare Moraux, *Alexandre d'Aphrodise*, pp. 212–13, n., arguing that the 'Greek' Philoponus here misunderstood Alexander.
- 16 E. Zeller, *Aristoteles und die alten Peripatetiker*, 3rd edn (Leipzig: O. R. Reisland, 1879), p. 566 n. 8. The German original should be consulted, since in the English translation (1897) there are some faults in the rendering of this long footnote. Brentano, F. (1867) in *Die Psychologie des Aristoteles* (Mainz: Franz Kirchheim), pp. 134–5 and esp. n. 59, also adopted an interpretation of this kind, but only after emending the text to read αἰσθητῶ instead of αἰσθητικῶ in 429b 15 (a step against which Zeller (*Aristoteles*, p. 566 n. 8) rightly protested).
- 17 Thus G. Rodier, in *Aristote: Traité de l'âme* besides Hicks, *Aristotle: 'De Anima'*; Ross *Aristotle: 'De Anima'*, and Hamlyn, *Aristotle's 'De Anima'*, although this interpretation can lead them

ARISTOTLE ON KINDS OF THINKING

(e.g. Hamlyn, *ibid.*, pp. 135ff.) to pronounce Aristotle's discussion in this chapter very unsatisfactory and incoherent. An exception is W. Theiler, *Aristoteles Über die Seele* (1959), who even reads κρίνει ὁ νοῦς at 429b 13 (see below), giving his justification *ad* 429b 22.

- 18 Zeller (*Aristoteles*, p. 566 n. 8) realized that the complexity was deliberate and needed to be accounted for, but his explanation of it is strained.
- 19 Aristotle's usage elsewhere in the *De Anima*, moreover, suggests that had he wanted to express 'one judges', he would have used not κρίνει but κρίνομεν ('we judge') as at 426b 14 and 428a 3. Although at 408b 13–15 Aristotle suggests that it may be better not to say that the soul does things, but that a man does things 'with' his soul, in practice he does not adhere rigidly to this usage. For instance, at 427a 20–1 he says that the soul judges in thinking and sensing, but at 426b 10 he says that every sense judges its objects. At 426b 14 he asks with what we sense that white and sweet differ, but subsequently in 427a 2ff. he talks of 'that which [in the soul] judges' that they differ (τὸ κρίνον).
- 20 Aristotle's detailed discussion of the learning process occurs in *A. Pst.* II, 19 and not in *De An.* III, 4, but 429b 5–9 clearly alludes to that process (as the ancient commentators too noticed).
- 21 It is standard Aristotelian practice to distinguish between different kinds of thinking by distinguishing between the objects peculiar to each kind and the manners in which those objects are thought about. This, for instance, is how Aristotle distinguishes between the 'three contemplative philosophies, mathematics, physics, theology' (102a 18–19) in *Meta.* E 1. The numerous intellectual activities and faculties discussed in the sixth book of the *Nicomachean Ethics* are minutely distinguished from one another in the same way. Consequently, it should cause no surprise if also in *De An.* III, 4 two kinds of thinking are distinguished in respect of their objects ('flesh' and 'what it is to be flesh') and in respect of the manner in which the mind employs the various psychic faculties (on which more below). This is another point that was automatically understood by the ancient commentators on the *De Anima*.
- 22 See note 12 above.
- 23 A similar point is made by Aristotle in his criticism of Empedocles in *De An.* I, 5. Empedocles supposed that the soul can know things in the world because it contains the same four elements as they do and 'like knows like'. Aristotle comments: 'It helps not at all that the elements are in the soul, if the proportions and the composition will not also be in it; for each will know its like, but none will know bone or man, if these will not also be in it' (410a 7–10). Here λόγου is translated 'proportions', since Aristotle has just quoted Empedocles on the proportions of the four elements in bone. Aristotle himself seems to talk of the proportion of *sensible qualities* that is characteristic of a substance (see notes 10 and 14 above). This accords with his characterization of the four elements by sensible

qualities in *De Gen.* II, 2–3 and with his assertion in II, 8 that all mixed bodies are composed out of all the simple bodies (the elements).

- 24 Consequently, in *De An.* III, 4 as well, the basic distinction is between thinking about things ‘not without matter’ and thinking about things ‘without matter’, of which ‘judging flesh’ and ‘judging what it is to be flesh’ are respectively examples. Indeed, the latter is an example of infallible thinking, whereas in ‘judging flesh’ the mind fallibly ascribes an essence to a material object. But there can also be fallible thinking about things without matter, such as false contemplative thinking; see further the last section of this paper.
- 25 Although not in the usual text, the word ‘only’ occurs in MS γ and the lemmata of Simplicius and the ‘Latin’ Philoponus, and is anyway implied (see below).
- 26 The closing clause has to be translated thus (and not as ‘but the object of thought will belong to it’) because this is how $\acute{\upsilon}\pi\acute{\alpha}\rho\chi\epsilon\iota$ (‘will appertain’) has been used throughout both problem and answer (compare Simplicius, ad loc.).
- 27 See 425b 26–426a 19 and esp. 426a 9–11: ‘Just as both acting and being affected are in what is affected, so also both the actuality of the object of sensation and that of the sensitive [part of the soul] are in the sensitive [part of the soul].’ Moreover, this is just an application of the standard Aristotelian doctrine of *Phys.* III, 3, according to which the potentialities of both agent and patient are actualized in the patient.
- 28 Hamlyn says that the phrase $\acute{\alpha}\lambda\lambda\omega\varsigma \acute{\epsilon}\chi\omicron\nu\tau\iota$ ‘tends to suggest that the intellect by which one judges essences . . . is not after all utterly distinct from the senses. This implies a kind of unity of the faculties, like the unity of the senses implied earlier (*Aristotle’s ‘De Anima’,* ad loc.). The problem, however, is that it suggests *more* than this, if the reference is to the mind. It suggests that the mind is simply a particular *mode* of sensation, although – as we saw – this is precisely the view that Aristotle rejected in discussing his predecessors.
- 29 See the discussion above of the relevant passages in the *Metaphysics*.
- 30 The ancient commentators may have identified the unnamed faculty with the mind because it is said to be possibly ‘separate’ ($\chi\omega\rho\iota\sigma\tau\hat{\omega}$) in 429b 16 (see above). In context, however, the meaning may be ‘separate from sensation’ rather than ‘separate from matter’. But even if the latter, it cannot be excluded that Aristotle was wondering whether there might be another faculty separate from matter *besides* the mind, or whether even the imagination itself might be thus separate, since in 432a 9–10 (see below) he describes $\phi\alpha\nu\tau\acute{\alpha}\sigma\mu\alpha\tau\alpha$ as like $\alpha\iota\sigma\theta\acute{\eta}\mu\alpha\tau\alpha$ but *without matter*.
- 31 In *Mem.* 1, 450a 9ff. the same question is raised, but given an answer with reversed emphases on sensation and the mind: $\phi\alpha\nu\tau\acute{\alpha}\sigma\mu\alpha\tau\alpha$ belong essentially to the commonsense, but incidentally to thought. Nor need this answer be Aristotle’s last word, despite following a reference (at 449b 30–1) to having discussed

ARISTOTLE ON KINDS OF THINKING

imagination in the *De Anima*; it is, rather, further evidence of the oscillations in Aristotle's view of the matter.

- 32 τὰ ἐν ἀφαιρέσει, as in 429b 18 (the mathematical example discussed above).
- 33 Compare *De Gen.* II, 4, 331a 9–10: 'alteration concerns the affections of the object of touch', where 'alteration' (ἡ ἀλλοίωσις) presumably refers (as elsewhere in this treatise) generically to changes in the category of quality. See also note 23 above.
- 34 Since the word for 'beacon' (φρυκτός) is actually an adjective meaning 'parched' etc., and used as a noun, it is conceivable that Aristotle is thinking of the sensible quality rather than the whole material object.

IV

TRACKING ARISTOTLE'S NOÛS

Michael V. Wedin

By common account the *De Anima*'s treatment of *noûs* is pulled in opposite directions by Aristotle's finitistic and his transcendentalistic tendencies. His finitistic side wants an account of *noûs* to be an account of strictly individual noetic activity without mention of factors or entities extrinsic to embodied persons. Despite stirring about the possibility that *noûs* is independent from body, the finitistic side dominates the work. Indeed, with appropriate weighting the independence of *noûs* can, for the most part, be assimilated to the dominant strain. In Γ.5, however, Aristotle's transcendentalistic side allegedly surfaces in the figure of productive mind (νοῦς ποιητικός). Here commentators have taken up, roughly, three lines of interpretation. For some, Γ.5 remains exclusively interested in the individual mind and simply, in fact of course not so simply, countenances the immortality of one of its parts.¹ For others, curiously undaunted by Aristotle's silence on the point, productive mind, while not properly a part of the individual mind, is required to complete the account of individual noetic activity.² And some, finally, retreat to the position that in Γ.5, Aristotle gestures towards the transcendent intelligences of *Meta*. Λ without intending any connection whatever with individual noetic activity.³

None of these three routes is successful in restoring an easy wholeness to the *De Anima* account. Nor does any one of them appear, beyond a doubt, to capture what Aristotle wants to say. Arguing this to full effect would require detail that is better left for another occasion. Here I shall proceed directly with interpretation.⁴ The target is mainly *De An.* Γ.4 and 5, and the interpretation's thrust is that together these chapters provide

the essentials of a thoroughly finitistic account of individual noetic activity. More particularly, I shall suggest that because productive mind figures in a general finitistic account of mind, it must itself yield to a non-transcendentalistic analysis. I begin with some remarks on $\Gamma.4$ and continue at somewhat greater length in Part II with $\Gamma.5$.⁵

I

Aristotle is the first philosopher whose views are sufficiently sophisticated to constitute a genuine theory. As such he is the first serious functionalist in the philosophy of mind. Primarily, an account of the soul is to concern itself with what various sorts of creatures can do. Those capable of more intricate, linguistically informed behaviour are said to be endowed with *noûs*. A functionalist account of *noûs* will not, of course, consist solely in a list of kinds of noetic behaviour but, rather, will attempt to explain how an entity must be structured to be capable of producing such behaviour. Whether we must introduce into the explanation a separate entity as the doer of noetic acts is an interesting but, at the outset, independent question.

In general Aristotle downgrades the ontological question in favour of the functionalist programme less because that question is especially difficult than because answers, if any, to the ontological question will follow from the demands of the functionalist theory.⁶ Thus, at the start of $\Gamma.4$ (429a 10–12) he proposes to examine the distinguishing features of *noûs* and to say something about how thinking comes about, *whether or not* mind is separate extensionally. So it is clear that Aristotle thinks the functionalist programme can be pursued without settling the ontological question. Especially suggestive for my purposes is the division of labour indicated in the line. For the question of what features are distinctive of *noûs* is kept separate from the question of how thinking occurs, and thus the possibility arises that $\Gamma.4$ is meant to address the first and $\Gamma.5$ the second question. It is this suggestion that I want to exploit.

Among the features $\Gamma.4$ marks out as distinctive of mind are the following:

1. Thinking is something like being affected (429a 14–15).
2. One can think of what one wishes (429a 17).

Feature 1 follows from the analogy, adduced early on in Γ.4, between perceiving (αἰσθάνεσθαι) and thinking (νοεῖν).⁷ The analogy, often granted strict governance over the Γ.4 account, is in fact crucially imperfect. For, as 417b 19–21 makes plain, what produces the activity (τὰ ποιητικὰ τῆς ἐνεργείας) of perceiving is invariably something external, while in the case of thinking it is somehow something in the soul. Since this in turn is held at 417b 21–3 to imply feature 2, which has no counterpart at all for perception, the analogy itself should not be taken too literally. On one point, however, Aristotle takes the analogy quite seriously, namely, on the causal role of the object of thought. This is clear from the requirement (429a 14) that thinking be (something like) being affected by the object of thought (ὑπὸ τοῦ νοητοῦ), together with the remark (429a 17–18) that the relation between mind (νοῦς) and objects of thought (τὰ νοητά) is similar to that between that which can perceive (τὸ αἰσθητικόν) and objects of perception (τὰ αἰσθητά). (See also *Meta.* 1072a 30, where mind is said to be moved by the object of thought (νοῦς δὲ ὑπὸ τοῦ νοητοῦ κινεῖται).) Thus, just as, causally, it is the object of desire or perception that produces actual desiring or perceiving, so also it is the object of thought that produces actual thinking. Let us then enter as a third feature of mind:

3. Actual thinking is produced by the object of thought (429a 13–14).

Three further features central to the Γ.4 account are:

4. Mind is nothing actual until it thinks (429a 24).
5. Mind is identical with its object (430a 3–5).
6. Mind thinks itself (429b 9).

Feature 4 is said to follow from (at least) three other theses. Ordered in terms of consequence, they are that mind's range is unrestricted, that it is unmixed (ἀμιγής) with anything, and that its sole nature is that it is potentiality. This last thesis most likely means simply that mind's sole nature is the potentiality to be identical with any possible object of thought. After all, its nature could hardly consist in being identical with any given set of objects. Nor can its nature consist in some noetic activity that is invariant over variation in content or object of thought, for, as Aristotle insists at 430a 5–6, we do not always think. So the

account of mind's nature is functionally in line with his account of other faculties. Both are to be defined as potentialities₂ (developed potentialities) or, in his alternative idiom, as actualizations₁ of certain potentialities₁ (undeveloped potentialities). The difference is just that faculties other than mind are actualizations₁ of distinct physical structures, namely, sensory organs. It is this that explains the limitation on the range of objects accessible to the non-noetic faculties.

Note that it need not, indeed cannot, be implied that the mind is devoid of all modifications, particularly those connected with learning, memory and the like. How else could the theoretical man come to contemplate this rather than that truth? The point, rather, is that while receptive mind is modified, such modifications are no part of its nature. Unlike the physical structures that partially define other faculties' natures, these modifications in no way set boundary conditions on what the mind can do.

Finally, the fact that the mind is not defined as the actualization₁ of any set of physical structures explains why it is indeed nothing actual until it thinks. For all other faculties there is something actual even when the faculty is not operative, namely the particular physical structures over which they are defined. Notice that the mind may well depend on a complex of physical structures, say in virtue of its dependence on images, without being the actualization₁ of any such structures. So feature 4 need not be made into the paradoxical claim that mental content is somehow created out of nothing.

Let me now turn to features 5 and 6. Feature 6, the thesis that the mind thinks itself, does not enjoy a settled interpretation among Aristotle's commentators. I shall try to avoid the thick of the debate by restricting comment on 6 to the discussion at hand. Notice first that in finding feature 6 at 429b 9 I reject the translators' popular substitution of 'thinks by itself' for 'thinks itself'. The former enables one to take Aristotle as claiming only that when one is a fully capable noetic agent one can think by oneself. It cannot, of course, be denied that this makes sense in context:

When mind has become each thing [ἕκαστα] as one who actually₂ knows [ὁ ἐπιστήμων ὁ κατ' ἐνέργειαν] is said to be and this happens when he can actually₂ exercise his potentiality₂ by himself – it is still in some sense a

potentiality₂ but not in the same way as before it learned or discovered (i.e. not as a potentiality₁). Then it is capable₂ of (actually₂) thinking itself [αὐτὸς δὲ αὐτὸν τότε δύναται νοεῖν].

(429b 5–9)

There are, however, cogent reasons to resist the substitution. Not the least of these is thorough manuscript agreement for reading δὲ αὐτόν rather than the needed δι' αὐτοῦ in the final line of the passage. The emendation also makes the line curiously otiose, for Aristotle has just said that a subject can exercise his mind by himself. Finally, the fact that feature 5 is introduced in the first line indicates that the topic of discussion is the relation between mind and its objects. So feature 6 is hardly out of place here.⁸ Aristotle appears to regard the scope of 429b 5–9 as entirely general, certainly so for 5. It follows then that 6 also is asserted as a general thesis. So implicitly the passage is committed to something like the following:

7. Whenever one actually thinks (i.e. when the mind is identical with the object of thought), then the mind thinks itself.

Although I shall later have more to say that bears on 7, let me now comment further on 6. Notice that in 429b 5–9 Aristotle asserts but does not explain 6. Indeed, at the chapter's end 6 is regarded as something of a puzzle. Feature 1 plus mind's simplicity makes it problematic how the mind can think at all. To this is immediately attached the question how mind can think itself. In the light of our preceding paragraph, this is an appropriate query. If for the mind to think an object is for it somehow to think itself, then perplexity regarding the first will spill over to the second. The two problems require joint illumination.

Aristotle in fact offers a solution of sorts in Γ.4. The problem was that ordinarily in cases of being affected, two actual things are involved, a first thing that is affected and a second thing that causes the first to be affected.⁹ In the case of mind, however, there is only a single actual thing, for in any episode of thinking the mind is actually identical with the object that produces the thinking. Since whatever else it *may* be affected by, namely any other potential object of thought, is no actual thing, the problem

of how mind can think and yet be simple is supposedly met. The problem of mind thinking itself submits to similar resolution. Since, in the case of things without matter, mind is identical with its object, it follows that in such cases mind thinks itself.

Notice, however, that this solution solves the pair of puzzles strictly in terms of the language in which they are set. What it does not do is provide any picture of how the mind can do what the solution requires of it. In effect we still lack a theory about the functional organization of the mind. This, I suggest, is part of what $\Gamma.5$ is meant to provide. So let us look at that perplexing chapter.

II

What sort of picture of mind underlies an account containing the features we have just discussed? In particular can we sketch a picture that gives productive mind a natural and finitistic role? So far as I can tell this is possible only by taking seriously Aristotle's distinction in $\Gamma.5$ as a distinction between receptive and *productive* mind. The standard translation of νοῦς ποιητικός by 'active mind' is, I suggest, off the mark doctrinally as well as linguistically (here 'creative mind' fares much better). So I shall assume that there is a quite definite sense in which one aspect or part of the mind is productive or creative and that, as the explicanda, features 1–7 figure as constraints on what is reasonable to say about this aspect. Very roughly, the underlying view I have in mind (call it M) is this:

At t a thinks (noetically)¹⁰ of something P if, and only if, at t a 's mind not only produces P but also produces itself by producing P .

The central idea is that in producing an actual object of thought the mind also produces itself as an actual thing. *Qua* actual, the mind is nothing other than the activity whose content is the particular object of the given episode of thinking. Even this characterization threatens to mislead insofar as it allows for what I call the searchlight model of mind. Here the mind is thought of as sweeping through noetic space until encountering an object, at which point content materializes. Not only is this less apt as a characterization of a *productive* noetic function, but also it counters Aristotle's commitment to the thesis of

intentionality, which requires objects for all genuine mental acts. Indeed, the prime mover's self-thinking may simply be an advanced expression of the commitment. So noetic activity is necessarily activity under a certain objectual mode and a mind producing itself is always a mind producing itself *as producing an object*.

Of course *M* does not entail any strong thesis about the identity, in general, of *a*'s mind, for such talk is talk about the essential nature of *a*'s mind, and this we know to be pure potentiality. Perhaps criteria of identity for such an entity will be forthcoming from facts about the person *a*, but in no case will they appeal to facts about an alleged episode-independent entity. And in any case Aristotle displays little interest in the identity conditions for any such entity and, presumably, no more in its actual existence. This is just what one would expect from a fundamentally functionalist account.

It appears, then, that *M* explains 4, 5 and 6. It also honours 3's causal requirement because actual thinking is produced by the mind's production of the object of thought. The object of thought that produces thinking is, of course, actual, and so *M* squares with the requirement that the productive factor in cases of being affected be something actual. The gloss on 1 required that mind's object be internal to it. *M* satisfies this by legislating that the mind itself produces its object.¹¹ Feature 2 squares with *M* in like manner. The causal role of the object of thought in episodes of actual thinking is no threat to mind's thinking what it wishes, precisely because it is the mind itself that produces the object.¹²

Stressing that the analogy between αἰσθάνεσθαι and νοεῖν is directed at the causal aspect of each provides a rather nice account of how the αἰσθητόν/αἴσθημα relation is in its turn analogous to the νοητόν/νόημα relation. The point of the latter analogy lies, I suggest, in the causal role of the αἰσθητόν and the νοητόν respectively. Just as the αἰσθητόν is the immediate cause of perceiving (αἴσθησις), so also the νοητόν is the immediate cause of thinking (νόησις). And just as the resultant state of the perceiving subject is occurrence of a certain αἴσθημα or perceptual content, so also the resultant state of the thinking subject is occurrence of a νόημα. As παθήματα in the soul, both αἰσθήματα and νοήματα are, we know from *Int.* 1, objective, and thus the analogy cannot mean

to underscore an objective/subjective distinction. And since objects of perception are external but objects of thought not, neither does the analogy mean to distinguish νοητά and νοήματα as external versus internal items. Thus the analogy between perceiving and thinking supports *M*'s emphasis on the causal role of certain internal and objective items and, more to the immediate point, it gives a straightforward account of at least part of what the νοητόν/νόημα – distinction consists in.

It is also worth noting that although the νοητόν/νόημα distinction is not that between objective and subjective items of awareness, it does play a role in allowing Aristotle's theory to maintain both the objectivity of objects of thought and their identity with the thinking subject (properly, with the subject's mind). First stress that the thesis of identity is part of Aristotle's theory of νόησις or the activity of thinking. Thus the sense of identity called for will be a function of the role of the thesis in the wider theory. So far as I can see, nothing more than formal identity is required. Then, in order to *distinguish* *x*'s thinking *P* from *y*'s thinking *P* without threat to the objectivity of *P* (the νοητόν that is the same for *x* and *y*), an additional feature is called for. This is just the νόημα which is formally the same for *x* and *y* but which, as a causal result of the νοητόν *P* in distinctive noetic structures, is numerically different.

Some might find it preposterous to propose, as *M* does, that the mind creates itself in producing its objects. Discontent may stem partly from neglecting the fact that the mind thus creates itself only as something actual, and partly from failing to appreciate sufficiently Aristotle's commitment to functionalism. Given a predominant concern with what noetic agents can do, *M* does provide a partial account of the facts. Conjoined with Aristotle's taste for ontological parsimony, these reminders do something to enhance *M*'s plausibility. What, for instance, would be gained by postulating an episode-independent mind? Certainly not clarity.

There is another line of support for *M* besides its usefulness in explaining 1–7. Numerous passages tout the mind's immunity to error. With respect to its proper objects at least, *noûs* divines truths only. This is a difficult point for the Platonist who countenances the independent existence of objects of thought. For here there is logical space to drive a wedge between thinker

and object of thought. The usual device for coping with this possibility, namely endowing *noûs* with an intrepid ability to fathom distinct objects, is notoriously unsatisfactory. Aristotle's solution is more attractive. If the mind not only creates but also is identical with its objects, then there simply is no logical space for the error-enabling wedge.¹³

In any case the infallibility of mind with regard to its objects is problematic at best. Reflexive self-reference, however, fares rather better. One simply does not have any idea how to concoct the required discreditation story, however far-fetched. Sincere uses of the reflexive pronoun 'I' are *ipso facto* referentially successful uses. So there is a certain sense in which mistakes are not possible here. I raise this point because it suggests a surprising line of support for *M*, a line recently drawn with some elegance by Robert Nozick in a somewhat different context.¹⁴ Nozick suggests that infallibility of genuine reflexive self-reference is among the most salient features of full selfhood and that the notion of the self best explaining the feature is the notion of something that constitutes itself in the very act of reflexively referring to itself. This is surely a close cousin of *M*.

What is more to the point, however, is that there is some evidence that Aristotle himself would welcome such an account. In at least one place, *EN* Γ.1, 1111a 7–8, Aristotle suggests that while I can be mistaken about almost any other feature of an action I perform, I cannot be mistaken about the fact that *I* am performing the action. Since here, and elsewhere, he displays techniques suitable for handling mistakes in reference via descriptions (and, by straightforward extension, proper names), he must have something like reflexive self-reference in mind at 1111a 7–8. Aristotle's concerns do not take him deeply enough into problems of reflexive self-reference, or of personal identity for that matter, to find him anticipating Nozick's theory of the self. But they do go far enough to add support for attribution of *M* to Aristotle.

So far I have leaned heavily on Aristotle's usage. This at least has allowed me to explain why productive mind is *productive*. But Γ.5 contains substantive discussion of productive mind, and the question that now looms is whether my interpretation can be squared with these remarks. The discussion of productive and receptive mind divides roughly into three stages: 430a

10–14 introduces the distinction in terms of a connection between nature and the mind; 430a 14–17 explicates the latter term of the connection; 430a 17–25 retails the crucial features of productive mind. Suppose, then, we begin with the connection between nature and mind.

The connection between mind and nature

Since [as = ὡςπερ] in the whole of nature [ἐν ἀπάσῃ τῇ φύσει] there is, on the one hand, something that is the matter for each thing of a given kind [τι τὸ ὑλὴ ἐκάστῳ γένει] (and this it is that is potentially all the things of the kind) and, on the other hand, something different that is the cause and that which produces [τὸ αἴτιον καὶ ποιητικόν] by making all of them [τῷ ποιεῖν πάντα] in the way that an art is disposed with respect to its matter, so must these differences hold in the soul.

It is unsurprising that the above passage has been aligned with the view that productive mind is the prime mover, particularly if one retains the bracketed ὡςπερ in 430a 10. For one might then take the passage to assert an analogy between mind and nature. Just as there is a single thing that makes all things in nature, so also in the soul something, presumably the divine mind, makes all things. But two considerations counsel otherwise. First, the conditional structure of the passage urges elimination of ὡςπερ¹⁵ and requires that what is said about mind follows from the general rule on whatever is in nature. Second, the fact that Aristotle writes ‘each *kind* of thing’ rather than ‘each thing’ makes it clear that he is not at this point introducing anything as grand as the unmoved mover but merely issuing a rule on any production whatever, namely that it occur within a genus.¹⁶ This is a standard and familiar requirement.¹⁷

So there is, initially, no warrant for linking productive mind and the divine mind. What Aristotle does want to focus on is the *way* productive mind produces its objects. Γ.4 approves of those who describe the mind as the place of forms, so long as the forms are understood as potentially and not actually present. Thus the general point seems to be that productive mind retrieves, as it were, from receptive mind a given object of thought and thus renders it actual. That this is a rather special

sort of production is clear from the fact that it is likened to the way an art produces its result. On the standard account of *De Gen. A.7* there are two kinds of productive agent (τὸ ποιοῦν): where what produces does not have the same matter as what is affected, it is possible that it move without being moved itself (324a 24–34). Thus, whereas wine produces health by itself being affected, the doctor manages this without suffering change. So too for the *art* of medicine (324b 5–7), which thus rates as an unaffected producer (τὰ ἀπαθῆ τῶν ποιητικῶν). Aristotle appears, then, to be urging that productive mind will, like an art, produce thinking or an object of thought without itself being affected. Since this was one of the features of the mind advertised in Γ.4 as well as in Γ.5, it is unsurprising, given our hypothesis, that Γ.5 should explain this in terms of one of the mind's structural features.¹⁸

It might be objected that although the first part of the passage allows for the above interpretation, its sequel does not. So we must square our account first with Aristotle's characterization of the two features of mind and then with the traits assigned to productive mind. In 430a 14–17, the first is explained as follows:

And there is, on the one hand, a mind that is of this sort by becoming all things [ὁ τοιοῦτος νοῦς τῷ πάντα γίνεσθαι], and on the other hand, one that is of this sort by making all things [ὁ τῷ πάντα ποιεῖν], as a sort of disposition such as light [ὡς ἕξις τις, οἶον τὸ φῶς]. For in some way too light makes colours that are potential [τὰ δυνάμει ὄντα χρώματα] into colours that are actual [ἐνεργεῖα χρώματα].

Since I am suggesting that the above passage and *De An. Γ.5* in general attempt an explanation of individual noetic activity, the mind or minds here introduced must be the same as that discussed in *De An. Γ.4*. For the latter is clearly the individual mind. In particular, the distinction between productive and receptive mind is to be connected with the mind described in 429b 5–9 (see p. 131 above) and with the puzzle in 429b 22–5 about how the mind can think at all, if thinking is something like being affected.

An additional remark is in order on the passage. The point I wish to stress is that even when the mind is actually₂ thinking

of, say, a triangle, it is potentially thinking all other objects of thought. This is essential to any account of the activity of thought, because the mind cannot actually₂ think two objects of thought at one and the same time, yet it must be possible for it actually₂ to think another object at a later time. If, to reinvoke our puzzle, thinking were *only* being affected, the latter condition could not be met. Since, we have seen, it is clearly the case that thinking is at least something like being affected, there must be some other feature of thought which allows for the actually₂ thinking mind to think other thoughts. This additional feature is, I submit, nothing more than the productive mind of *De An.* Γ.5.

Obviously nothing like productive mind would be required were thought like perception in point of the causal efficacy of its object. For perceivings change at change of object perceived and without agency on the part of the subject. But nothing of this sort is available in the case of thought, where the mind itself creates the object that produces thinking. So if *De An.* Γ.5 attempts an answer or partial answer to the puzzle raised at 429b 22–5, then it is unsurprising that the distinction between productive and receptive mind completes the account of individual mind sketched in *De An.* Γ.4.

On the interpretation here offered, that productive mind makes all things simply states a condition on the mind actively thinking an object. The mind is productive just in the sense that the object it happens at *t* actually to think was prior to *t* potentially an object of such thought and, in accordance with *M*, in producing the object at *t* it produces itself as well.

The analogy between productive mind and light

Aristotle pursues the account by analogizing productive mind to light. The force of the analogy is easily missed, if we neglect certain features of Aristotle's views on light. For our purposes it will be sufficient to consider 418b 9–13,

Light is the activity [ἐνέργεια] of this, the transparent *qua* transparent [τοῦ διαφανοῦς ἢ διαφανές]. Potentially, whenever this is, there is also darkness. Light is a sort of colour of the transparent, whenever it is made actually

transparent [ὅταν ἢ ἐντελεχεία διαφανές] by fire or something like the body above (i.e. the sun),

with 418a 31–b 2,

All colour is capable of changing that which is actually transparent [του κατ'ἐνέργειαν διαφανούς] and this is its nature,

and 418b 18–19:

Since darkness is the privation of this sort of disposition [τοιαύτης ἕξεως] from the transparent, light is the presence of this [ἢ τούτου παρουσία].

On a number of points it is clear that Aristotle means the analogy to be taken seriously and in some detail. For instance, 418a 31–b 2 supports our linking of the ‘puzzle’ of *De An.* Γ.4 to the doctrine of productive mind, by urging that it is in the *nature* of the actually transparent that it change from one colour to another. Analogously, it is in the *nature* of an actually₂ contemplating mind that its object change. Indeed, this is a requirement productive mind is tailored to fit. Further, because what is actually transparent will always be a certain colour, the actually transparent does change *qua* red, say, but not *qua* transparent. Similarly, the actually₂ contemplating mind does change *qua*, say, triangle because it may contemplate a different object.¹⁹ But *qua* productive mind itself, it cannot change.

Note also that while light is the actuality of the transparent *qua* transparent, it does not follow that light is potentially something else but only that the actual *transparent* that is light is potentially dark. This is important, for it counters the long-received view that productive mind is always active. Light, necessarily active whenever occurrent in any sense, need not be, and in fact is not always, occurrent. On our interpretation it is unsurprising to find *De An.* Γ.4 already extending this feature of the analogy to the individual mind. At 430a 5, it states rather plainly that subjects, and here is meant individual contemplating minds, are not always thinking. So unless we assume that the analogy is suddenly not to be taken seriously, additional support is forthcoming for our interpretation.

Even more important, however, is the following. Attention to

the account of light in *De An.* B.7 reveals that light is not a causal factor, in any standard sense, in the account of vision. Rather, it is a certain sort of activity that results from the operation of such a standard causal factor on the transparent. Nowadays this causal factor, characterized by Aristotle as fire and the like, would be described as the source of light itself. Nothing of this sort applies to Aristotle, whose theory of light excludes any notion of the propagation of light. The fact that Γ.5 omits this factor from the mind/light analogy suggests Aristotle's desire to keep us from taking productive mind to have a *standard* causal role. Certainly, *M* gives it no such role.

What Aristotle *does* want to incorporate from the B.7 account is the characterization of light as both an activity and a disposition [ἔξεως, 418b 19]. What can be made of this, at least *prima facie*, curious dual nature of light? Light, I suggest, is strictly an activity, but one that might be called a dispositional activity. While it does not occur without some colour, it need not occur as any given colour. For Aristotle light does not come in kinds such as blue light, red light, etc. The official view that light is a sort of colour of the transparent *qua* transparent does not imply²⁰ that light is a colour that is different from ordinary colours. Rather it is an activity which, while active, is *disposed* to take different manifestations, and must manifest some colour.

Indeed, just this view seems to be entailed by a pair of B.7's opening theses. The first (418a 29–31) asserts that colour, the proper domain of the *per se* visible, overlies something else (presumably the transparent) that also is *per se* visible, not in the definitional sense of *per se* but because of having in it the cause of its visibility. The second thesis (418b 4–6) asserts that the transparent is visible not in the strict (presumably definitional) sense of *per se* visible, but because of the colour of something else. Together these theses imply that light never occurs without some colour or other and that it itself is visible only insofar as a given colour is visible. Analogous points hold for productive mind and its objects.²¹

The picture I want to extract from the analogy is that of productive mind as nothing more than the activity alone of episodes of individual thinking. In terms of *M* it is the inclusion of productive mind as a structural feature that explains how the mind creates its objects simply by its activity. For this just is its activity.²² It is also productive mind that explains how thinking

is possible, thus cashing the second promissory note issued at the outset of Γ.4.

Let me enhance the picture by showing how it accommodates the difficult last sentence of the chapter. Then we shall be in a position to address the more notorious attributes of productive mind. Here is how I read the sentence:

But we are not mindful [οὐ μνημονεύομεν] because this [τούτο=νοῦς ποιητικός] is not capable of being affected [ἀπαθές] while receptive mind [ὁ παθητικὸς νοῦς] is perishable; and without this there is no thinking [ἀνευ τούτου οὐθὲν νοεῖ].

The interpretation I shall suggest fits the lines 430a 23–5 into an account of the function and activity of an individual mind. It does so with an ease that is surprising, given the bewildering variety of interpretations so far advanced. First, I assign as the object of οὐ μνημονεύομεν productive mind or, more precisely, episodes of productive mind. Whereas we do remember receptive mind or, better, episodes involving receptive mind by virtue of its capacity for images, there is nothing analogous for productive mind. The reason for this is that productive mind is nothing more than the activity, as opposed to the content, of a given episode of thinking. If, for example, I think about something at a given time and later recall the prior thought, what I remember is the object or content of the thought and not the thinking itself. We may be reflexively aware of the activity itself while engaging in it, but it drops out as a candidate for memory.²³ It is also clear why Aristotle would raise the issue. Probably only philosophers give attention to the pure activity involved in thinking.²⁴ Non-reflective thinking, fixed on the object of thought, excludes such thought about thinking and, hence, most thinking subjects are unaware of it. So when Aristotle says that we are not mindful of such thought, he is paying tribute to the fact that we do not notice that aspect of episodes of thinking which is without content.²⁵

Second, I take the perishability of receptive mind to amount to the perishability of what occurs in receptive mind rather than to the perishability of receptive mind as a whole (although one *could* talk about *receptive* mind as perishing whenever thinking stops). The passage contrasts what is unaffected (ἀπαθές) with what is perishable (φθαρτός). So what is perishable is what is

capable of being affected and this, I submit, means just that one state of receptive mind gives way as another comes to be. Appropriately, *De An.* Γ.4. requires precisely this of an account of the operation of the individual mind.

Third, the final clause of the sentence, καὶ ἄνευ τούτου οὐθὲν νοεῖ, fits the entire chapter into an account of individual minds. Exactly how this works, however, is not completely clear. Hicks took the contrast to be between ἀπαθές and ἄϊδιον and, hence, reasoned that the final clause asserts the dependence of the conditional part of the contrast (receptive mind) on its unconditional correlate (productive mind). Thus 430a 25 would get the reading 'and without the productive mind the receptive mind does not think'.²⁶ Interpretation aside, grammar urges reading ἀπαθές in contrast to φθαρτός. This, plus the fact that receptive mind is that feature of mind which does not answer to the activity itself of thinking, requires that the last clause be read 'and with the productive mind there is no thinking'. Thus the account of *De An.* Γ.4 is finally completed by explaining that, in addition to the capacity for being affected, the individual mind must also be capable of the sort of activity that goes on under the heading of productive mind. I do not, of course, mean to imply by this that the two can proceed independently of one another.

Finally, this interpretation gives productive mind a natural and important place in Aristotle's theory of individual noetic activity. It also explains why productive mind appears exclusively in *De An.* Γ.5. Since productive mind is required for a conceptually complete analysis of individual *noûs*, the obvious place to introduce the condition is after the discussion of *De An.* Γ.4 which retailed but did not explain the salient features of individual noetic activity. Where explicit analysis of individual mind is not undertaken, no point would be served by mention of productive mind. On the other hand, were νοῦς ποιητικός God or divine reason, one would expect the notion to occur in other contexts. But it is notoriously absent.²⁷

The attributes of productive mind

The theory of productive mind just offered faces a final interpretative task. The remaining lines of *De An.* Γ.5, namely 430a 17–23, attribute a number of characteristics to productive

mind, characteristics which most commentators assume hold only of an entity such as God or the prime mover. Even Hamlyn accommodates this intuition by making productive mind an abstract entity required as the metaphysical ground of thought. So it will be necessary to show how these *prima facie* transcendentalistic characteristics can apply to productive mind construed as the activity only of episodes of individual thought. It also turns out that the lines lend support to the hypothesis that Γ.5's distinction between receptive and productive mind is part of a lower level explanation of the sort of mind that Γ.4 discusses.

The characteristics I have in mind are, then, typically located in the following:

And this mind is (*a*) separate [χωριστός] and (*b*) not capable of being affected [ἀπαθήs] and (*c*) unmixed [ἀμιγής] since (*d*) in its being it is activity [τῆ οὐσίᾳ ὡν ἐνέργεια] for (*e*) what acts [τὸ ποιοῦν] is always superior to what is acted upon and the principle to the matter.

(430a 17–19)

And (*f*) actual knowledge [ἡ κατ' ἐνέργειαν ἐπιστήμη] is the same as the thing but (*g*) potential knowledge is prior in time in the individual case [ἐν τῷ ἐνί], although in general it is not prior in time [ὅλως δὲ οὐδὲ χρόνῳ]; but (*h*) it is not the case that it sometimes thinks and sometimes does not [ἀλλ' οὐχ ὅτε μὲν νοεῖ ὅτι δ' οὐ νοεῖ].

(430a 19–22)

And, finally,

(*i*) When separated [χωρισθείς] it is just that very thing that it is [μόνον τοῦθ' ὅπερ ἐστί] and this alone [τοῦτο μόνον] is (*j*) not capable of death [ἀθάνατον] and is (*k*) eternal [ἀίδιον].

(430a 22–3)

I shall begin with remarks on the possibility that productive mind is here accorded some sort of ontological independence. It is easy to read *a* in this way. Even if this is correct, it is relatively harmless. Given that *a* is grouped with *b* and *c*, the notion of separation here awarded productive mind is too weak to support a Cartesian notion of mind, let alone any doctrine of pre- or post-

existence. For suppose *b* and *c* referred back to the arguments of *De An.* Γ.4 for the independence of mind: can we now take these arguments to pertain to productive mind? Recall that the mentioned arguments show only that mind is independent of body in the sense that mind is not the actualization₁ of any set of physical structures.²⁸ This is precisely what it means for a faculty to be mixed with body. It also explains the fact that intense objects induce fatigue in faculties that are actualizations₁ of physical structures but have no effect on mind. Such objects produce in the physical structures in question durational states that exclude reception of certain inputs.²⁹ In Aristotle's idiom the faculty ceases to be in a mean with respect of these inputs (objects). That the mind in general is not subject to such fatigue requires that receptive mind as well as productive mind be independent of any physical structures in the sense that neither is an actualization₁ of such structures. Otherwise contemplation of a particularly fine object of thought would after all inhibit the mind's capacity for thought of lesser objects. It follows that the (receptive) mind is dependent on body in the weak sense that it is not the actualization₁ of any specific set of physical structures but only requires such structures as a causal condition for its representational devices (images). Thus in no serious sense does *a* countenance separate existence for productive mind. Hence, we remove one temptation to identify productive mind with a transcendent entity.³⁰

The sense just given to separation in *a* is especially plausible in light of *d*, which gives as the reason for the separateness of productive mind that its being is activity. No mention of separate existence need be found here. Characteristic *b* squares obviously with our interpretation, as does *c*, whether the latter has the sense 'unmixed with body' or the sense 'unmixed with receptive mind (alternatively, images)'.

There is, however, an additional point that demands comment, namely the fact that Γ.4 has already listed *a*, *b* and *c* among the mind's characteristics. This has inclined a number of commentators towards the view that both receptive and productive mind are separate, unaffected and unmixed, and that they differ just on the point, mentioned in *d*, that productive mind is, additionally, activity.³¹ Unfortunately, problems arise here. First, the view overlooks the fact that *d* is given not just as another, even if distinguishing, feature of productive mind but,

rather, as the *reason* for productive mind being separate, unaffected and unmixed. Second, $\Gamma.5$ certainly appears to deny of receptive mind just these features, so how can $\Gamma.4$ be supposed to attribute them to it? Finally, there is $\Gamma.5$'s assertion that receptive mind is perishable. If, as Brentano thought, *a*, *b*, and *c* characterized items are eternal (a somewhat dubious proposition), then $\Gamma.4$'s mind could hardly be the same as $\Gamma.5$'s receptive mind. Brentano's rather drastic solution was to deny that the mind that becomes all things, what he called the '*aufnehmende Vernunft*' and took to be the subject of $\Gamma.4$, is the same as that which is said to be perishable. My solution would be to deny that $\Gamma.4$ intends in the first place to limit itself to receptive mind. Rather, the subject of $\Gamma.4$ is simply the individual mind of the ordinary person and $\Gamma.5$ provides a (partial) account of how it must be organized to function in the way it does.

So the reason that individual mind is separate, unaffected and unmixed will be that productive mind has these characteristics. The structure of the passage can be made to support this in the following way. Notice not only that *d* is the reason for productive mind enjoying *a*, *b* and *c*, but also that *e* explains *why d* is the reason. This suggests that Aristotle's reasoning involves the following principles:

8. If (i) what produces is superior to what is affected and (ii) productive mind is the purely active feature in thinking and (iii) what produces in the case of thinking is the purely active feature, then (iv) productive mind is superior to receptive mind.
9. If (iv) and (v) individual mind has superior qualities *a*, *b*, and *c*, then (vi) productive mind has *a*, *b*, and *c*.

Principles (i) and (ii) are asserted in the passage; (iii) follows from the general principle that what produces must always be something actual. So, if we may assume that separateness, unaffectedness and unmixedness are superior qualities, at least in the context of $\Gamma.4$, then we may assert (vi). Thus, the passage can be construed without requiring that receptive mind also is separate, unaffected and unmixed.

More needs to be said, however, for 9 allows us to say that productive mind has the features in question but not that this explains *why individual* mind has them. And just this is

demanded by our interpretation. The following principle, stated at *Meta.* 993b 24–7 and *A. Pst.* 72a 29–33,³² may help:

PT. If x has F because of y , then *a fortiori* y has F .

Just as the *Posterior Analytics* ranks as better known those propositions in virtue of which another is known, so also might not Aristotle here hold that, if individual mind is separate, unaffected and unmixed because of productive mind, then *a fortiori* productive mind has these features. And just as the *explanation* of P 's knowability involves appeal to the superior knowability of some Q , so also the *explanation* of individual mind's separability involves appeal to the superior separability of productive mind.

The above interpretation would benefit from a more direct account of how PT applies to the case at hand.³³ Taking the lead from d , the suggestion I want to advance is this: It is because of the nature of its *activity* that the individual mind must be separate, unaffected and unmixed; and it is because individual mind enjoys such activity *in virtue of* productive mind that productive mind itself must be separate, unaffected and unmixed.

Roughly, the idea is that, unlike other kinds of cognitive activity, noetic activity is not the activity of any set of physical structures. Recall that faculties are distinguished in terms of their objects. Since, for all cognitive faculties, the activity, or faculty in activity, is somehow identical with its object, restriction on range of object will entail restriction on range of activity, and this in turn, I am suggesting, enforces a corresponding restriction on the cognitive structures that are the *loci* of the activities in question.³⁴ It would thus follow that any faculty whose range of objects is limited must itself be unseparate, affected and mixed *because* its activity just is, in part at least, the activity of certain physical structures. In short, object individuation goes hand in hand with organ individuation.

The fact that mind's objects are unrestricted means, then, that its activity is not the activity of any set of physical structures. Now, of course, one might respond that this supports the view that receptive mind also is characterizable as a , b and c . In view of the above paragraph, however, it is unclear why anyone would say this. For, if I am right, ascribing a , b and c to

receptive mind will not, in any case, *explain* why individual mind has these qualities, for such an explanation must proceed in terms of noetic activity, and here it is productive mind that plays the crucial role. So it is indeed understandable that $\Gamma.5$ would attach *a*, *b*, and *c* to productive mind alone.

We come now to *f*, *g* and *h*. Although Ross brackets the entire passage,³⁵ it is in fact quite at home in the chapter. First, Aristotle has just finished a discussion whose interpretation makes use of the thesis of identity between object and active faculty; second, the identity is one of the features (namely 7 above) $\Gamma.4$ attributes to individual mind; third, the solution to how mind can think itself is given in terms of the thesis of identity. So, if nothing else, *f*, *g* and *h* serve to make exact the sense we are to give to the identity of mind and object.³⁶ But the passage might also be addressing a more interesting issue. At the end of $\Gamma.4$ (430a 6) Aristotle says that we must consider why we are not always thinking. Since this query comes on the heels of the assertion that theoretical knowledge is one with its object and since this is just what *f* says, the passage as a whole might be cashing the $\Gamma.4$ promissory note. This, at any rate, is the suggestion I want to try out.

Given the identity of actual knowledge and its object (*f*) and the fact that what is known is an external feature of the world, there may be some temptation (registered, we may suppose, in the promissory note) to think that individuals are also eternally in possession of actual knowledge. After all the mind in activity is said to be identical with its object. But *g* neatly rules this out by emphasizing that in the individual case, which is the case that concerns Aristotle, potential rather than actual knowledge is temporally prior. There are, however, at least two ways to take this. Read with, for example, *Meta. $\Theta.8$* , 1049b 17–1050a 3, *g* might mean to assert that actual knowledge is prior in general because for any individual to acquire the knowledge that *P* is for him to acquire the ability to exercise the knowledge and this presupposes that tokens of such actual knowledge already exist. How else would one learn? Since, however, $\Gamma.4$ and 5 show little interest in knowledge acquisition as opposed to its exercise, an alternative account would be preferable.

Meta. Z.1 suggests a non-genetic notion of priority in time. Adapted to the case at hand, we get something like the following: *x*'s potential knowledge that *P* is prior in time to *x*'s actual

knowledge that $P \equiv x$'s potentially knowing at t that P does not depend on x 's actually knowing at t that P and x 's actually knowing at t that P does depend on x 's potentially knowing at t that P .³⁷ In our earlier idiom, being an actual₂ knower entails being an actual₁ knower, but not conversely. On this reading, *g* is about episodes of thinking and heads off a potential difficulty for the account of individual thought.

But if this is correct, what role is *h* supposed to play? What else but a transcendent entity could do justice to such an impressive characteristic? Since *we* quite plainly are not always thinking, the subject of νοεῖ would appear to be God or an appropriate transcendent analogue. This at least is the received view. But so far from implying, as this requires, that the subject of νοεῖ is always thinking, *h* need yield nothing more than what it literally says, namely that it is not the case that there is something which at one time thinks and at another time does not think.³⁸ In effect, *h* simply denies the existential proposition that there exists a special entity for thinking such that it sometimes thinks and sometimes does not.³⁹ This is exactly what Aristotle needs to say at this point. For having shown in *g* that his theory does not have the undesirable consequence that individual mind is always thinking, it might then be supposed that individual productive mind must sometimes exist but not think. So Aristotle is quick to point out that productive mind simply isn't an entity of this sort. Socrates may well be such an entity, but productive mind surely is not. Indeed, it is not an entity in the usual sense at all. After all, it is odd to talk of light as an entity and odder still to countenance the logically difficult locution 'Thinking thinks'. So *h* can be reconciled with construing productive mind as the activity solely of individual episodes of thinking. It hardly needs pointing out that anyone who held *M* would also be committed to *h*. Aristotle's explicit mention of *h* thus counts in favour of attributing to him *M* or something like it.

What about the admittedly more difficult *j* and *k*? Surely, it would seem, immortality and eternality attach to none but transcendent entities. That appearances may well deceive in this case is, however, suggested by the fact that in *i* Aristotle introduces *j* and *k* by a quite deliberate use of the aorist participle χωρισθείς rather than the χωριστός already available from 430a 17. Indeed, the latter would have Aristotle simply

repeating himself.⁴⁰ Clearly something new is afoot, but what? Recall that the sense given to χωριστός in *a* was not strong enough to yield immortality and eternity. So Aristotle's choice of the aorist participle arguably signals not only that some different sense of separation is meant, but also, and in particular, that the separation is sufficient for some sort of ascription of immortality and eternity to productive mind. What is needed is an account of *i* that accommodates *j* and *k* within our general finitistic reading for the *De Anima*.

The first of two strategies I shall suggest for accommodation assumes with Zabarella and Hicks that occurrence of the aorist participle in *i* imposes at least one constraint on interpretation, namely that the separation is to have occurred in past time.⁴¹ But, of course, productive mind may rate either as an individual or as a divine affair. This, plus the option of reading χωρισθείς either extensionally or notionally, yields the following possibilities for *i*:

- i*1. when divine productive mind is extensionally separated
- i*2. when divine productive mind is notionally separated
- i*3. when individual productive mind is extensionally separated
- i*4. when individual productive mind is notionally separated.

On *i*1 it would follow, given the aorist participle, that at some time in the past divine mind, singly or severally, was separated and so that it was previously unseparated. Since to be unseparated from receptive mind is to be unseparated from matter, *i*1 requires that at one time the divine mind was not separate from matter. But by definition, as well as by proof (of the unmoved mover), it is impossible that divine mind be connected with matter. So *i*1 will not do.

If we construe notional separation as separation by abstraction, then *i*2 is no better off. For Aristotle abstraction is always abstraction from something, typically something material. So, again, it cannot be divine mind that is separated by abstraction. And this certainly squares with *j* and *k*, for what would be meant, in any case, by attributing, *in abstraction*, immortality and eternity to the divine mind?

Aristotle is committed by *i*3 to some sort of individual immortality, not for all individual mind but at least for individual

productive mind. Since here there will be no memory, perception and the like, proponents of *i3* must urge that what thus post-exists the individual is entirely without content. This, of course, raises serious problems about the individuation of such allegedly individual entities. If we finally cannot say what would count as having two as opposed to one such entity on our hands, then either *i3* is internally objectionable or it collapses into *i1*. In either case it fares ill. It would also be rather odd for Aristotle to interject discussion of individual immortality into a context where it serves no apparent purpose. Such objections notwithstanding, for our purposes it is sufficient to provide a credible non-transcendentalistic interpretation.

The remaining candidate is *i4*. As Hicks indicates, there is nothing objectionable about taking the aorist of the active verb to cover separation by abstraction. Less clear, however, and what Hicks does not address, is how *j* and *k* can be fitted into the abstractionist account. One place to start is with the *Meta. E.1* contrast between the objects of mathematics and the objects of theology. The objects of theology are extensionally separate (χωριστά) and changeless (ἀκίνητα), those of mathematics are not. They may, however, be considered as if they were separable and changeless. Since 1026a 10 glosses the latter with the 'eternal' (αἰδιον), we may suppose Aristotle to be saying that mathematics considers its objects *as if* they were separate, changeless and eternal. *Phys. B.2* takes us a step further, for there such objects are said to be rendered changeless by dint of their being separated in thought (χωριστὰ τῆ νοήσει, 193b 34) from motion. So the separating is what yields the changelessness and eternality of the objects of mathematics and, on the assumption that ἀκίνητον and ἀθάνατον are here interchangeable, we get an exact parallel with *i*, *j* and *k*. Thus, just as separation in thought is what gives the objects of mathematics apparent transcendental characteristics, so also is this the ground for attribution of immortality and eternality to productive mind in *j* and *k*. And just as the objects of mathematics are not extensionally separate, so also for productive mind.

In effect, I am suggesting that we relativize ascription of divine properties, counting them as indicators of the most divine thing in us, not of anything absolutely divine. In particular, I am urging this even for what seems to me to be the

most difficult case, namely ascription of immortality. There is, in fact, independent evidence for relativization. *EN* X.7 grants human beings a restricted share in divinity on the basis of an ability to engage in *theōria* and urges, therefore, that we do whatever we can to immortalize ourselves (ἀθανατίζειν). This can hardly count as making us immortal in the sense of the gods. Hence, it falls short of ascription of any transcendental property to *noûs* (what does the theorizing). This is even clearer from *Protr.* B 108 (Düring), which counts *noûs* and *phronēsis* alone, of the things in us, as candidates for divine status. For Aristotle says only that this alone *seems* (ἔοικεν) to be immortal and divine. The most this warrants is ascription of a sort of ‘as if’ immortality to human *noûs*, especially in the light of the following sentences, B 109 and 110, which characterize man as a god *relative* to other animals because of his *noûs*.

So far, then, from demanding a transcendentalistic interpretation, *i*, *j* and *k* actually support the opposite. The only sense in which apparent transcendental attributes hold of the mind is that in which a certain feature, namely productive mind, has them and, even then, only in the weak sense of having them in abstraction. It is also clear why, *pace* Aquinas, productive but not receptive mind may be so considered. Not everything is a candidate for abstraction. In particular, nothing whose account includes or entails matter can be properly considered in abstraction.⁴² And, of course, the feature of mind that so requires matter is receptive mind, for an adequate account of receptive mind will require mention of at least general physical structures. In the idiom of *Meta.* E.1 it falls to the study of nature to investigate a certain kind of soul, namely that which is not independent of matter. Only productive mind can be *adequately* considered without mention of matter (note here the τοῦτον μόνον at 430a 22), and even then only if held separate in its own right from receptive mind. Of course, the general account of mind cannot proceed free from such mention, because both receptive and productive mind are required for the general account.

A final word is in order regarding how this first strategy makes Aristotle ascribe immortality and eternality to individual productive mind. The parallel with mathematical abstraction is by itself not enough, for we must have some idea of what such an ascription amounts to in its own right. In other words, *i4*

must be held to the condition that an object is suitable for consideration in abstraction only if there is no such actual object but we nevertheless have some idea of what such an object would be like. For objects of mathematics the condition is unproblematically satisfied; indeed, it is worth conjecturing that they would be suspiciously like the Platonic forms. (In this light Plato's 'mistake' was to construe notional separateness as ontological separateness.) Individual productive mind seems rather more recalcitrant. Nonetheless, it satisfies the condition in much the same manner. While not actually immortal and eternal, productive mind may, in abstraction, be safely so regarded because not only do we know what such an object would have to be like, but also we have actual examples in the divine intelligences and the unmoved mover.

The second promised strategy for accommodation drops Zabarella's assumption that the separation is to have occurred in past time.⁴³ Thus it is able to read *i* as notionally separating divine productive mind (i.e. *i*2). How exactly does this work? Assume that productive mind is a generic or determinable notion whose determinations are, or include, individual as well as divine mind. This requires only that in certain general features individual and divine productive mind are alike. Of course, they differ in certain respects as well. In particular, only the divine version will satisfy *j* and *k*. In *i*, then, separation is an analytical operation specifying for consideration the divine kind of productive mind. Thus we may paraphrase the entire passage as follows: 'When one has specified that type of productive mind that can when all alone be just what it is, then (unlike individual productive mind, which is the type that can be separated only in the weak sense of *a*) we have something that is not capable of death and is eternal (namely, divine mind).' In short, the separating in *i* is something *we* do when we consider one rather than another variant of productive mind. This means, of course, that divine mind makes an appearance in the *De Anima*. But it does so by way of removing itself from the sort of productive mind that is germane to the *De Anima* account. So that account remains stubbornly finitistic.⁴⁴

I have been arguing that Aristotle's programme in the *De Anima* does not call for transcendent entities or properties and that this holds for Γ.5's productive mind as well. By way of

conclusion, let me add a final bit of confirmation for this thesis. In A.1, 403a 3–15 Aristotle introduces the topic of mind's separability from body in terms of its dependence, or lack of dependence, on imagination. If thought depends on imagination, then even *noûs* will not be separable extensionally. Γ.8 then appears to establish the point by arguing that all thought requires images. But this may well not be conclusive, because the argument for thought's dependence on images employs a premise that Aristotle himself considers false, namely that there are no actual things apart from extended things. Recognition of the unmoved mover alone falsifies this.

So it may be that Γ.8 is not intended to argue a thesis for all thought (human thought, perhaps?). That this does no harm to my argument is clear from the fact that the final sentence of the preceding chapter raises, but immediately *defers*, the question whether the mind that can think separate objects should it itself lack separateness. What is most striking here is Aristotle's staunch neutrality on the extensional separability of *noûs*. Moreover, this is precisely his attitude towards the question at *De An.* B.2, 413b 13–16 and in Γ.4. In the light of this, the contention that Γ.5 countenances extensional or *in re* separateness for productive mind loses plausibility, for it asks us to find there an outright assertion of such separateness even though flanking chapters unabashedly promote neutrality. Surely this is asking too much. Besides, if we have succeeded in locating Γ.5 within a fundamentally functionalist account of individual noetic activity, the question need not arise at all.

NOTES

- 1 Aquinas 1925, §§742–3; Ross 1961, pp. 47–8; Rodier 1900, vol. 2, p. 465; Hyman 1982; possibly also Sorabji 1982.
- 2 Clark 1975, pp. 184–6; Brentano 1867; Guthrie 1962–81, vol. 6 (*Aristotle – An Encounter*), pp. 322–4; Hamlyn 1968, p. 140.
- 3 Wilkes 1978, pp. 115–16 and, possibly, Barnes 1971–2, p. 113.
- 4 For more in the way of defence, see Wedin 1988.
- 5 I do not deny the relevance to my topic of *De Generatione Animalium*'s discussion of *noûs* entering from without, of the suggestion at 408b 18 that *noûs* comes about in us as a sort of substance, and in general of those passages allegedly attributing divinity to man's *noûs*. Although such passages can, I believe, be brought into line with the present account, considerations of space require that I leave them aside.

- 6 One might, for instance, try to argue for mind's dependence on body from the functional role of images in thought.
- 7 Notice that the analogy generates two alternatives: either thinking will be a certain being affected (πάσχειν τι) or it will be something different like this (τι τοιοῦτον ἕτερον). It is clear, as 1 requires, that Aristotle wants the second alternative. B.2, 417b 6–7 announces that perception itself is not an instance of πάσχειν in the strict sense because it does not involve the destruction of something by its contrary. Rather, perception involves something (the faculty of perception) developing into itself and into actuality. The latter is called 'being affected' by convenience only because 'there is no name for the difference' (418a 1).
- 8 For a persuasive case against emendation see Owens 1976.
- 9 See, for instance, 417a 17–18: 'Everything [that is affected or moved] is affected or moved by something that is able to produce this and is in actuality.'
- 10 The caveat is simply to hold at bay passages, such as *De An.* Γ.2, 426b 22 and 426b 31–427a 1, that appear to countenance αἰσθητά as objects of thought.
- 11 That *M* does not commit Aristotle to the absurd thesis that mental content is created from nothing is clear from the fact the *M* is a thesis about fully capable noetic agents, the sort for whom the model of thinking sketched in 429b 5–9 holds. For such agents do not simply create objects of thought on their own; rather, objects of thought are already part of the public domain to be entertained at a thinker's discretion. Indeed, this is at least part of the effect of the, otherwise difficult, 430a 19–21: 'Actual knowledge is identical with its object, but potential knowledge is prior in time in the individual but not prior even in time in general.' Although Hamlyn brackets the sentence, presumably because the point of their inclusion is unclear, it is quite appropriate as a warning against mistaking the sense in which mind produces objects of thought. See also page 148 above.
- 12 *M* also seems tailor-made for the dilemma, raised at *Phys.* H.3, 247b 5–8, concerning how that which knows potentially comes to know actually not by moving itself but by the presence of something else. Since mind's objects are internal, the only way to avoid the outlawed case of the mind moving itself is to have it produce the object that affects it.
- 13 Of course, the gain is not without cost. For may not the gap be relocated at the point of contact between objects of thought and the world? Subjectivity is not so much the issue (Aristotle seems open to a model of concept acquisition that is globally inter-subjective), but rather the details of how the model works are what are in question. Nowhere does Aristotle give us a sustained and adequate account of his views on concept acquisition.
- 14 Nozick 1981, esp. pp. 87ff. ('Self-synthesis').
- 15 Some might retain ὡσπερ on the grounds that sometimes it is used to soften or apologize for introduction of a locution that is out of

context (see Liddell, Scott, Jones, *A Greek-English Lexicon*, p. 2040). For in the present case a principle from the theory of nature is suddenly enlisted to explicate a point about the mind.

- 16 Even had Aristotle written ‘each thing’ rather than ‘each *kind* of thing,’ there would be no warrant for identifying the productive factor in nature with the prime mover. Exploiting the scope ambiguity of the quantifier expressions ἐν ἀπάσῃ τῇ φύσει, ἐκάστῳ, and τῷ ποιεῖν πάντα, we could adopt [1A] $(y) (\exists x) (y \text{ is in nature } \supset x \text{ produces } y)$ rather than [1B] $(\exists x) (y) (y \text{ is in nature } \supset x \text{ produces } y)$ as the correct (partial) reading of the text. Besides this, 1B would, for the case of mind, require that some account be forthcoming of the relation between individual thinking and the master activity of a single global productive mind. But Aristotle nowhere even hints at the need for such an account (by contrast, incidentally, to Averroes and Avicenna), and it is difficult to see what it would consist in. In particular, adoption of 1B, or something like it, would seem to preclude any account of *individual* noetic activity.
- 17 See, for instance *De Gen.* A.7 and *Meta.* Θ.8.
- 18 It is clear from *Meta.* Θ.8 that producer unaffectedability is the intended point of analogy. In 1050a 30–b 1 a distinction is drawn between production that results in something apart from the producer, and that which does not. In the former, exemplified by building, the activity (ἐνέργεια) is in the result; in the latter, exemplified by *theoria*, the activity is in the producer (ἐν τῷ θεωροῦντι).
- 19 This is not as odd as it sounds. I have in mind simply the case where the individual mind is contemplating and so may be said to be identical with the triangle as an object of thought.
- 20 *Pace*, for example, Rist 1966, p. 12.
- 21 Contrast Ross 1961, p. 296, who finds the characterization of productive mind as both ἔξις and ἐνέργεια to be ‘the most conspicuous instance’ of the carelessness he finds pervasive in Γ.5.
- 22 Two passages outside the *De Anima* support my interpretation of what it means to characterize productive mind as a *hexis*. The first, *Meta.* Δ.20, lists as the first sort of *hexis* ‘a sort of *activity* of the haver and of what he has [ἐνέργειά τις τοῦ ἔχοντος καὶ ἔχουμένου]’ and says, in agreement with M, that this sort of having cannot be had, on pain of infinite regress. The second passage, *Meta.* Λ.7, 1072b 19–22, explains the thesis that *noûs* thinks itself (in language, incidentally, that closely reflects feature 7 of Part 1) on the grounds that for the mind to be actual is just for it to possess the object of thought (ἐνεργεῖ δὲ ἔχων). Since this is just the *hexis* mentioned above, being a *hexis* of a certain sort is nothing other than having an object. So on this point M and Γ.5 go hand in hand.
- 23 In this sense 430a 23–5 plays out the message of *Mem.* 450a 12–13, that even memory of objects of thought requires images.
- 24 The analogy with light further supports this line of interpretation.

De An. B.7, 418b 4–6 says that the transparent is not, strictly speaking, visible in itself (οὐ καθ' αὐτὸ δὲ ὄρατὸν ὡς ἀπλῶς εἰπεῖν) but only because of perceiving the colour of something else. Analogously, mind is not, strictly speaking, thinkable in its own right. Thus not only is it the case that the suggestion that we remember the activity of productive mind turns out to be a non-starter, but also we have here a view that is obviously of a piece with Aristotle's own account of what is involved in mind thinking itself.

- 25 Contrast this with Hamlyn 1968, p. 141, who is unable to find a plausible way to make productive mind the object of οὐ μνημονεύομεν.
- 26 Although Hicks does not say exactly this, it is what he is committed to. See Hicks 1907, pp. 509–10. Hamlyn, on the other hand, explicitly adopts the reading.
- 27 And, if productive mind is elsewhere mentioned, it would appear to be in explicit discussions of thinking, such as *Meta.* A.7, 1072b 19–22. In any case this passage nicely agrees with my interpretation (see note 22 above).
- 28 Indeed, as the sense given to χωριστός at the outset of Aristotle's analysis (*De An.* B.1, 413a 3–7), it would appear to govern discussion of separation in the balance of the work. Unless, of course, other indications are forthcoming, as in the χωρισθείς at 430a 22, discussed below.
- 29 See, for instance, *De An.* B.12, 424a 28–32.
- 30 It might be urged that *b* and *c* manage to contrast productive and receptive mind, even if *a* is understood not as separate from body but as separate from receptive mind. Here productive mind would not be dependent even in this weak sense. But there is no reason to find in this a claim stronger than that the noetic feature determined by productive mind does not properly involve images. It is sufficient to hold that the purely active feature of an episode of thinking can, *for purposes of analysis*, be separated from its content. This, incidentally, is quite like the manner in which light is distinct from the transparent and from any given colour of the transparent.
- 31 For example, Hicks 1907, p. 502 and Rodier 1900, pp. 460–3, who go so far as to urge that *a*, *b* and *c* apply in *different senses* to receptive and to productive mind.
- 32 'A thing has an attribute more than other things, if it is in virtue of it that the same quality [τὸ συνώνυμον] belongs also to the other things', and 'for that by which an attribute belongs to something always has it more' respectively.
- 33 It is, for instance, clear from examples alone how PT applies to the case of scientific knowledge. For *Q* to be more knowable than *P* is, at least, for *Q* to be logically independent of *P*, but not conversely. Thus the proposition that planets are proximate heavenly bodies can be known apart from propositions it explains, propositions such as that planets twinkle.
- 34 This move needs more argument. Perhaps the discussion in *De An.*

- Γ.1 concerning the exhaustiveness of the five senses contains the seeds of such an argument.
- 35 Ross's arguments for bracketing 430a 19–21 are curious at best. First, 430a 19–20 reappears at 431a 1–3. Although Alexander obelizes the latter lines (Brentano and Rodier are comfortable with them at both places), Ross thinks they fit better in Γ.7 because that chapter he regards anyway as a 'collection of scraps'. This is surely a bizarre sense of fit. Second, the text is alleged to read more smoothly without the lines: 'this sort of mind is separable . . . and when it has been separated'. But notice that the first argument does not justify bracketing 430a 22 (our *h*), and the second argument requires bracketing from ἀεὶ γάρ in 430a 18 (our *e*). Thus Ross's arguments recommend bracketing a full third of the chapter! Surely a more acceptable alternative should be sought.
- 36 Earlier promises notwithstanding, it is appropriate to say something about the thesis (call it *A*) that mind thinks itself because of its connection with the thesis (*B*) that mind and object of thought are identical. That there is a connection is clear enough. The entailment from *A* to *B* is asserted at 429b 5–9 and explained at 430a 2–5. What is in question is the meaning of *B*. There are, initially, four ways one might take *B*: (*B*1) mind introspects or intuitively grasps itself; (*B*2) mind studies itself *qua* mind as just another object of scientific investigation; (*B*3) mind can retail its contents and this amounts to mind knowing itself; (*B*4) mind thinks itself in thinking any proper object of thought (an object without matter). Since I favour *B*4, something should be said about the alternatives. *B*1 is a difficult doctrine in its own right, and there is virtually no evidence to support its attribution to Aristotle. Indeed, my discussion so far (see note 24 above) indicates that we are aware of the mind only insofar as we are aware of particular thoughts it has. *B*2 is true, witness the *De Anima* itself, but irrelevant. Γ.4 and 5 do not even pretend to be addressing the *programme* of the *De Anima* but clearly are treating a specific topic that arises in the course of carrying out the programme. Further, Aristotle's explanation of the possibility of *B*, namely, a certain version of *A*, suggests not *B*2 but *B*3 or *B*4. But *B*3 is difficult because, if to know mind's contents is for mind to know itself, then it seems that mind will have to know some complete set of objects. But this is an implausible reading of *A*, for 429b 5–6 says 'whenever the mind has become *each* thing' (i.e. ἕκαστα, and not ἅπαντα, which would be required for 'all'). Besides this, *B*3 denies *B* any interesting theoretical role in the account of noetic activity. *B*4, on the other hand, squares with the explanation at 430a 2–5 and makes *B* part of a theory of thought.
- 37 At 1028a 33–4 the primacy in time of substance is glossed: 'of items in the other categories, none can exist separately, but only substance.'
- 38 Most recently, Sorabji 1982, p. 305, takes the unduly strong reading. It is also the view of Merlan 1967. In fact, *h* is almost universally held to say that productive mind is always thinking. But,

- as we have shown, *h* says no such thing at all and, were it to do so, would flatly contradict Γ.4, 430a 5's assertion that we are not always thinking. Hicks 1907, p. 505, registers but does not resolve the 'glaring contradiction'. Ross leaves *h* without comment but probably bracketed it for the same reason (see note 35 above). Others, for example Brentano, avoid contradiction by making divine mind the subject of *h*. But this proliferation of subjects is not needed.
- 39 Again, the parallel with light is instructive. For there it is obviously mistaken to suppose that light is the sort of thing that is sometimes active and sometimes not. It just is a sort of activity and, hence, is either active or simply non-occurrent.
- 40 Although I have translated χωριστός in *a* as 'separate', 'separable' might be happier in the light of the χωρισθείς in *i*. This is acceptable since I have given a weak reading anyway to χωριστός.
- 41 But see note 43 below.
- 42 The requirement is made clear in *Meta. Z.11*'s claim that because man (unlike circle) is found in a certain sort of matter only or, alternatively, is explained as a certain form in a certain matter, it is not possible for us to separate the form (διὰ τὸ μὴ καὶ ἐπ' ἄλλων ἐπιγίγνεσθαι ἀδυνατούμεν χωρίσαι, 1036b 7).
- 43 The first strategy can be pursued even if, as I suspect, Zabarella is wrong to insist that the aorist carries a past time constraint. It is enough, to rule out *i1* and *i2*, that the separation occur at some time. This would, however, not exclude a view on which productive mind, while neither individual nor divine, is nonetheless singular. Here there would be but one productive mind for all individual thinkers (presumably in the way that there is, some argue, just one substantial form *per species*) and differences in individuals will track differences in receptive minds. While I applaud the non-transcendentalistic possibilities of this view, it fails to provide any account of how individual thinking comes about. Moreover, if this single productive mind is always thinking (and, as activity, it would have to be), then we have no account of why we are not always thinking. But we have been promised both accounts.
- 44 If I am correct in taking *M* as a general thesis on productive mind, then we may want it to cover divine productive mind as well. It turns out that *M* does indeed apply to the unmoved mover as a self-thinker and in a rather surprising way. We know from *Meta. Λ.6* that the unmoved mover must always exist and by *M* we know that, as a purely thinking thing, it can manage this only if it always thinks itself. It will, in short, guarantee its eternal existence by continuously producing itself through eternally thinking itself. So the unmoved mover is just the limit case of *M*.

MICHAEL V. WEDIN

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APPENDIX: NOTE OF LATER RELEVANT PUBLICATIONS

The central position of the paper here reprinted has been developed and expanded in three subsequent writings: *Mind and Imagination in Aristotle* (New Haven, Conn.: Yale University Press, 1988); 'Aristotle on the mechanics of thought', *Ancient Philosophy* 9 (1989), pp. 67–86; and 'Aristotle on the mind's self-motion', in *Self-Motion: From Aristotle*

TRACKING ARISTOTLE'S NOÛS

to *Newton*, eds M. L. Gill and J. Lennox (forthcoming). The claim that the distinction between productive and receptive minds is simply part of the explanation of the operation of individual minds is expanded in Wedin 1988 in general and specific ways. Generally, the view is situated within Aristotle's representational theory of thought. Specifically, the 'paradoxes of thought' at the end of *De An.* III, 4 are shown, in great detail, to be resolved by the distinction. The book also contains a spirited attack on the full-blown divinity of νοῦς. Wedin 1989 offers an account of how objects of thought can be both universals and the causes of individual episodes of thinking. It weds the notion of contact between object and mind (the causal mechanism) with the notion that productive and receptive minds occur at a lower level of organization within the noetic system and that this level, in turn, gives way to a level at which φαντάσματα occur as the representation devices for thought. Wedin (forthcoming) reconciles the causal thesis, that the mind is caused to think by the object of thought, with the autonomy thesis, that the mind can think whatever it 'wishes'. This requires showing in what sense the mind is a self-mover and how the causation in question is a kind of supervenient causation involving different levels of organization within the noetic system. The paper also broadens the interpretation's textual base to include passages from the *Physica* and the *Ethica Eudemia*.

V

BODY AND SOUL IN ARISTOTLE

Richard Sorabji

1. ARISTOTLE'S VIEW

(i) Interpretations of Aristotle's account of the relation between body and soul have been widely divergent.¹ At one extreme, Thomas Slakey has said that in the *De Anima* 'Aristotle tries to explain perception simply as an event in the sense-organs'. Wallace Matson has generalized the point. Of the Greeks in general he says: 'Mind-body identity was taken for granted. . . . Indeed, in the whole classical corpus there exists no denial of the view that sensing is a bodily process throughout.' At the opposite extreme, Friedrich Solmsen has said of Aristotle's theory: 'it is doubtful whether the movement or the actualisation occurring when the eye sees or when the ear hears has any physical or physiological aspect.' Similarly, R. D. Hicks thinks that Aristotle makes the faculty of desire wholly psychical as opposed to corporeal, and Jonathan Barnes has described Aristotle as leaning hesitantly towards the view that desire and thought are wholly non-physical. But on the emotions and sense-perception, Barnes takes an intermediate position. Aristotle treats these, he says, as including physical and non-physical components. Other writers too have sought a position somewhere in the middle. Thus G. R. T. Ross concedes that we find in Aristotle 'what looks like the crudest materialism'. It appears that objects produce changes in an organism, 'and the reception of these changes in the sense organ is perception'. But, he maintains, this gives us only half the picture. The complete theory 'may in a way be designated as a doctrine of psychophysical parallelism'.

W. D. Ross also seeks a middle position. He thinks that Aristotle sometimes brings out

the distinctively mental, non-corporeal nature of the act [of sensation]. . . . But Aristotle cannot be said to hold successfully to the notion of sensation as a purely mental activity having nothing in common with anything physical. He is still under the influence of earlier materialism.

The most popular alternatives have been to regard Aristotle as some kind of materialist, or as some kind of Cartesian. But, as we shall see, there have been other assimilations. I believe that all these interpretations are mistaken, and that Aristotle's view is something *sui generis*. It is not to be identified with the positions of more recent philosophers. Moreover, when we see what his view is, we shall find that it has interesting implications of its own. But first, by way of background information, I must make two preliminary points about Aristotle's concept of the soul.

(ii) *Preliminaries: the soul as capacities*. Aristotle sometimes thinks of the soul as a set of capacities, such as the capacity for nutrition, the capacity of sense-perception and the capacity for thought. These capacities are not a mere conglomeration, but are related to each other in intimate ways so as to form a unity. The lowest capacity (nutrition) can exist without the higher ones, but not vice versa.

According to Aristotle's best-known definition, the soul is the form, or first actuality, of a natural body with organs (*De An.* II, 1, 412a 19, b 5). But it is not always noticed that he regards this definition as insufficiently informative. He calls it 'impression' or 'sketch', and a 'very general statement'. But it would be ridiculous, he says, to give a general definition of the soul to the neglect of definitions that pick out the particular kinds of soul: the soul of a plant, a beast, or a man (*De An.* II, 1-3, 412a 7, b 4, b 1, 413a 9-10, 414b 25-8, b 32-3). An account that does pick out the various capacities by which living things differ from each other will in fact be the most appropriate account of the soul (*De An.* II, 3, 415a 12-13). And with this statement at the end of *De An.* II, 3, he provides the plan of the rest of the *De Anima*. For the rest of the work considers in turn the capacity for nutrition, the capacity of sense-perception, the related capacity of imagination, the capacity for thought, and the capacity for voluntary movement.

Aristotle's statement, that the most appropriate account of

the soul is the one which picks out these capacities, already suggests the thought that perhaps the soul just *is* these capacities. This thought is confirmed when we notice that Aristotle speaks of the capacities as *parts* of the soul (e.g. *De An.* 413b 7, b 27–32, 429a 10–13, 432a 19; *Mem.* 449b 5, 450a 17). It is confirmed again when, using one of his technical terms, Aristotle calls the soul a first actuality (*De An.* 412a 22–8). For a first actuality is also describable as a second potentiality (*De An.* 417a 21–b 2), in other works as a capacity. The interpretation is also confirmed by Aristotle's claim that the relation of soul to body is parallel to that of sight to the eye.²

I shall follow Aristotle below, by thinking of the soul as a set of capacities. The conception does, incidentally, have one great advantage, namely that we undeniably have a soul of the kind Aristotle describes. At least, we have a soul, if this means that we have the capacity to grow, perceive and think. But it must be admitted that Aristotle sometimes adds the difficult idea that we have a capacity to perceive and grow which *explains* our perceiving and growing.³

(iii) *Preliminaries: the biological conception of the soul.* The word 'soul' may sound archaic to some modern ears, and people may be tempted to substitute 'mind'. But then they are likely to confine the functions of the soul to what we call mental acts, and this will take them away from Aristotle's conception of the soul. In all this, people have been influenced by Descartes. He explains that previously the word 'soul' (*anima*) had been applied to the principle of nutrition as well as to the principle of consciousness (*cogitatio*). But he will use the word only for the latter, and, to avoid confusion, will, whenever possible, substitute the word 'mind' (*mens*).⁴

Aristotle's conception of the soul is much broader than this. He takes the view which Descartes castigates, that the nutritive processes are a function of the soul. Plato and others had attributed a soul to plants.⁵ Plato had coupled this view with another current view, that plants had sensations and desires.⁶ Aristotle retains the first idea, that plants have souls, but sensibly rejects the second, that they have sensations and desires. Instead, he makes sensation the distinguishing mark of animals. But how, then, does he justify continuing to attribute a soul to plants? By extending the concept of soul, so that the non-

conscious processes of nutrition and growth will now count as an activity of the soul. This extension may sound strange to us. But appeal to a (non-conscious) soul is needed, Aristotle thinks, to do justice to such facts as that a plant does not expand haphazardly, but preserves, or develops, a certain distinctive organization.⁷ The resulting conception of the soul makes it coextensive with life, that is, with all life. The conception of soul is a biological one, and it encourages Aristotle to stress the continuity, rather than the differences, between processes in plants and processes in humans. Descartes was wrong, in the passage referred to at the beginning of this paragraph, when he ascribed the connection between the soul and nutritive processes to the earliest men. The connection is in fact an innovation of Aristotle's, though it may well be true that Aristotle's predecessors, other than Plato, already ascribed to the soul functions which were not mental ones.⁸

Though Aristotle makes plant growth a function of the soul, he does not take the next step. He does not attribute the movements of earth, air, fire and water to a soul within them, presumably because the four elements are lifeless things. But although the four elements do not have souls to move them, there are analogies between the movement of elements, the growth of plants and the movement of animals. All three are processes directed towards an end, and all three are due to nature, which in *Phys.* II, 1 is defined as an internal cause of change (192b 20). There is the difference that the nature, or internal cause, is not a soul or a desire in the case of the four elements. But this only raises the question how the nature that resides in the elements differs from a plant soul or from the desire of animals, a difficult question which we shall encounter again (p. 180 below). The *Physics* offers no satisfactory answer, but an answer can be pieced together from Aristotle's later works.⁹

(iv) *The contrast with Descartes.* We can now return to the rival interpretations of the body/soul relation in Aristotle. Some of the interpretations attribute to Aristotle a Cartesian stand. Solmsen and Barnes attach importance to the fact that Aristotle makes perception an act of the soul. But given Aristotle's biological conception of the soul (which Solmsen has done so much to bring out), this tells us that perception manifests life,

not that it manifests consciousness. G. R. T. Ross finds significance in Aristotle's calling perception an *energeia* and *entelecheia*. But when Aristotle insists that perception is an *energeia* and an *entelecheia*, rather than a *pathos* (cf. Barnes, op. cit. n. 1 below, p. 38), he has in mind that it is an actualization of a disposition and that the subject of this actualization is not destroyed but preserved and fulfilled (*De An.* 417a 14–16, b 2–12). When Aristotle says that perceiving is an *energeia*, rather than a *kinēsis* (*Meta.* 1048b 18–36; *EN* 1174a 14–b 9; *Sens.* 446b 2–3), he means that the processes are incomplete until they reach their end, but with activities like perceiving one can say 'I have perceived' right from the very beginning. These points do not imply that perceiving is 'something mental' (G. R. T. Ross, op. cit. n. 1 below, p. 5) or an 'act of mind' (p. 6). Living can be called an *energeia*, even when we are talking of the non-mental life of a plant. W. D. Ross and Barnes attach importance to the passage we shall discuss below where Aristotle says that smelling is something else besides (*para*) a physical change (*De An.* 424a 32–b 18). But they assume without warrant that if there is 'something else', it can only be conceived of as distinctively mental or non-physical.

Ross's second piece of evidence is that Aristotle sometimes speaks of perception as involving discrimination. But here too he assumes without warrant that discrimination can only be conceived of as something distinctively mental. Barnes and Hicks think that the faculty of desire is made wholly non-physical at 433b 19, where Aristotle contrasts it with the organ which is physical (*sōmatikon*), and which is therefore to be discussed in another work that deals with the body as well as the soul. But I believe Aristotle means no more than that the organ differs from the faculty in being a *part* of the body, and that the *De Anima*, though concerned with states that belong to the body and soul alike, is not interested in *parts* of the body as such. Again, crude though the discussion of the soul is in Aristotle's early work, *Phys.* VII, I do not see with Barnes any claim at 244b 7–15 that the kind of qualitative change represented by sense-perception is non-physical.

Turning to the case on the other side for a while, we should notice that Aristotle has no word corresponding to 'mental act', or to Descartes's *cogitatio* (consciousness). Charles Kahn has suggested that the nearest word is *aisthanesthai* ('perceiving'),

for this covers a very wide range of mental acts.¹⁰ Nonetheless, as Kahn carefully points out, the word does not correspond to Descartes's *cogitatio*, for Aristotle draws a sharp distinction between thinking and perceiving. He never suggests that thinking is a kind of *aisthanesthai*. Nor, as we shall see, does he say of *aisthanesthai* the sort of things that Descartes says of *cogitatio*.

In a very un-Cartesian way, Aristotle insists that in some sense of 'is' every mental act is a physiological process. Thus anger is a boiling of the blood or warm stuff around the heart, in a sense of 'is' analogous to that in which a house is bricks (*De An.* 403a 25–b 9).¹¹ The point is made about all *pathē* of the soul, the examples in this chapter being anger and calmness, confidence and fear, loving and hating, appetite, pity, joy, perception and thought,¹² though he sometimes prefers to call the last two actions (*poiein*, 403a 7), or functions (*erga*, 403a 10) of the soul, rather than *pathē* (403a 3). About thinking he is at first hesitant, but, as we shall see, human thinking does not seem in the end to differ in a way that seriously affects his point. The point is not made about long-term states (*hexeis*), or capacities (*dunameis*) of the soul.¹³ And at one place Aristotle says it is thought to be a mark of the *pathē* rather than of the *hexeis* that they are corporeal (*EN* 1128b 14–15). Nonetheless, he does often speak as if *hexeis* and *dunameis* too had some kind of physiological basis.¹⁴

The statement that anger is a physiological process does not initially sound very Cartesian. But Cartesian interpreters of Aristotle may take courage (cf. Barnes, *op. cit.* n. 1 below, p. 37) from Aristotle's insistence that the physiological process is only the matter, or material cause, of anger. There is also a form, or formal cause, namely the desire to retaliate. And anger can be said to *be*¹⁵ this formal cause, or desire, just as a house can be said to *be* a shelter. This statement in 403a 25–b 9 is reinforced at 424b 3–18, where Aristotle says that exercising smell is something else besides (*para*, 424b 17–19) merely being affected by something. It is also a matter of *aisthanesthai*. In view of the wide use of *aisthanesthai*, we may take the word as meaning *awareness*. And we may take the point to be that smelling is not simply a matter of being affected by odour, but is also an awareness of odour. The Cartesian interpreter might now read into these two passages the idea that anger or smelling

has two 'components'. The physiological process is one component; the other is a purely mental act of desire or awareness.

This interpretation is impossible for two reasons. First, the form of a thing is not a component in it. A shelter is not a component in a house. Aristotle explains this carefully in the *Metaphysics*. His examples are a syllable, a house and flesh. These are composed respectively of letters, of bricks and of the four elements. But the form is not a further component. The arrangement of the letters B and A, for example, is not a component in the syllable BA (*Meta.* 1041b 19–33, 1043b 4–6). On the contrary, it is matter, not form, that constitutes the components. This is how matter is defined (*Phys.* 195a 19; *Meta.* 1032a 17). There is a second objection to the Cartesian interpretation. Even if there had been a component in anger other than the physiological process, that component could not have been a purely mental act. For Aristotle, no acts are *purely* mental, since *every pathos* of the soul is, among other things, a physiological process.

The Cartesian interpreter must not look, then, for a purely mental component in anger. His only hope lies in finding Aristotle treating anger as a whole as a distinctively mental act, in spite of its also being a physiological process. But it is no longer very clear what it means to call something distinctively mental, if one is at the same time calling it physiological. It is true that many recent materialists, in talking of the identity of mental states and brain states, have spoken as if this were possible. But Richard Rorty is right in taking them to task.¹⁶ The materialist view, as he points out, should be expressed by saying: 'What we thought to be mental acts may after all be physiological processes instead.' If one calls anger a physiological process, one cannot continue to call it distinctively mental. Or if one does, one is departing from a Cartesian concept of mental acts, and will then have to explain what one means by 'mental'. For Descartes, mental activities have no affinity (*affinitas*) with bodily activities.¹⁷ And the mind itself has properties which are actually incompatible with those of the body, for the body is extended and divisible, the mind neither extended nor divisible.¹⁸

Aristotle is unlike Descartes in several fundamental ways. For one thing, the topic of self-awareness does not play the same role in his account of the soul. Descartes defines the mind as a

conscious being (2nd *Meditation*, HR I, p. 152), and consciousness (*cogitatio*) as ‘all that is in us in such a way that we are immediately aware [*conscii*] of it’.¹⁹ Because of this, the notion of self-awareness is central in Descartes’s view of the soul. But Aristotle’s remarks on self-awareness are brief, sporadic and by no means centrally placed. The topic did not have the same interest for him. His most Cartesian remark is perhaps the one in the *Physics*, when he says that a change of quality in the sense-organs of a living thing differs from a change of quality in a lifeless thing, in that it does not go unnoticed (*Phys.* 244b 15–245a 2). He also suggests, though sometimes only in an ‘if’ clause, that one is inevitably aware of one’s own perceiving, thinking, and remembering. (*Sens.* 437a 27–9, 448a 26–8; *De An.* 425b 12; *EN* 1170a 29–b 1; *Mem.* 452b 26–8). But in several ways Aristotle’s remarks on self-awareness are unlike Descartes’s. First, he does not seem to hold consistently to the claims about self-awareness that we have just referred to.²⁰ Second, he is just as ready to entertain the idea that one is inevitably aware of one’s own walking (*EN* 1170a 30). And there is no attempt to make self-awareness a distinguishing mark of mental acts, by protesting, with Descartes, that awareness of one’s own walking is not immediate (see n. 19), or by distinguishing between the corporeal act of walking and merely seeming to walk.²¹ Third, Aristotle’s view of how one is aware of one’s own seeing is rather surprising. For *De An.* 425b 12–25 equates the question of how we are aware that we are seeing (425b 12, 13), or, in other words, how we are aware of our sight (425b 13, 16), with the question of how we are aware of the organ that sees (*to horōn*, 425b 19, 22). This implies that it is through awareness of the organ that we are aware that we are seeing. He goes on to remind us that the organ is coloured during the perceptual process (425b 22–5),²² and presumably we will be aware of its coloration.²³ This coloration is a physiological process, which could in principle, even if not in practice, be seen by other observers, using ordinary sense-perception. So what one is aware of on these occasions does not sound like a Cartesian act of mind. The only concession to a Cartesian way of thinking – and it is not a very big concession – comes when Aristotle says that the perceiver does not simply see his own organ and act of seeing (*De An.* 425b 17–22; *Som.* 455a 17), but is aware of it in a different manner.²⁴

There is another way in which Aristotle is fundamentally unlike Descartes. He does not divide up the world at the same point. We have already noticed that he does not treat mental acts as a single group, but makes a sharp distinction between perception and thought. Nor does he follow Descartes in trying to separate off from the group nutrition (see n. 4), or in distinguishing between corporeal acts of walking or seeing, which do not belong to the group, and seeming to see or seeming to walk, which do belong (see n. 21). Aristotle groups together thought, perception and walking as activities of which we are conscious, and does not follow Descartes in protesting that we are not *immediately* conscious of corporeal walking (see n. 19). Thought, perception and walking are grouped together again, on the grounds that they all belong to humans, none to plants. And they are grouped together with each other and with nutrition, on the grounds that all are due to the soul. Admittedly, walking, weaving and building are not things the soul does, but are merely due to the soul. But *De An.* 408b 11–15 explains that this is no less true of thinking and being angry. All are things the man does with his soul, not things the soul does.

If Aristotle comes close to Descartes anywhere, it will be in his account of thinking. Indeed, God's thinking is a wholly incorporeal activity, so that here Descartes and Aristotle meet. But what about human thinking? This will always involve a physiological process, if it is always accompanied by imagery. It might be maintained (cf. Barnes, *op. cit.* n. 1 below, p. 40) that images are involved only in the *acquisition* of concepts, not in the use of them: not, that is, in thinking proper. But this would be hard to square with the statements of *De An.* 431a 16, 431b 2, 432a 8. Moreover, Aristotle has *theoretical* reasons for wanting all human thinking to involve imagery. One reason (*De An.* 432a 3–10) is his desire to refute Plato's view that the objects of dialectical thought are ideal forms, which exist separately from the sensible world. Aristotle thinks that very few things can exist separately from the sensible world; so the objects of thought need a sensible vehicle, and a vehicle is provided by the image in which (cf. also 431b 2) the objects of thought reside. Thus Plato is wrong to suppose that dialectical thinking rises above the need for images (*Republic* 510B, 511C, 432A). Another reason for requiring images emerges in the *De*

Memoria, which is an important source for Aristotle's theory of thinking.²⁵ If we are thinking of a triangle, we put before our 'eyes' an image of a triangle, but neglect the irrelevant fact that the particular imaged triangle happens to be, say, three inches across, and attend only to the relevant features, such as its having three sides. Similarly, if we are thinking of something non-spatial, we still put before our 'eyes' something extended, but ignore the fact of its being extended (450a 1–7; cf. 452b 7–15). Obviously such a process requires imagery (and hence a physiological process) at the stage of thinking, and not merely at the stage of concept acquisition. If we are to open a crack for a Cartesian interpretation, we would do better to raise the question whether the physiological process stands to the act of thinking as its matter, or merely as the matter of the imagining which is necessarily involved in human thinking. Similarly, we might ask whether the physiological process stands as matter, or merely in some other relation, to the act of attending to the relevant features of one's image. But a good many more steps would be needed before we could move from these questions to the conclusion that Aristotle conceived of human thinking, or some aspect of human thinking, in a Cartesian fashion.

(v) *The contrast with Strawson.* This may be enough to make clear that Aristotle cannot be aligned with Descartes. But it should not be thought either that he can be aligned with present-day critics of Descartes. Present-day readers may be reminded of the anti-Cartesian arguments of Strawson,²⁶ when they see Aristotle refusing to make a sharp break between thinking or desiring on the one hand and walking, weaving or building on the other. But Aristotle is further away from Descartes than modern critics are. For he equally refuses to make a sharp break between walking on the one hand and nutrition and growth on the other. All are equally due to the soul.

(vi) *The contrast with Brentano.* In 1867, Franz Brentano interpreted several Aristotelian passages as meaning that the object of sense-perception or thought is not (or not only) physically present in the observer, but present in a non-physical way as an object of perception or thought (*Die Psychologie des Aristoteles* (Mainz, 1867), pp. 79–81, 86, 120 n. 23). In 1874, he suggested a new criterion of his own for distinguishing mental from physical phenomena. Mental phenomena are

directed to physical objects, and the objects have 'intentional inexistence'. That is to say, the object of a thought or wish exists in the mind, but does not need to have real existence outside the mind (*Psychologie vom empirischen Standpunkt*, trans. L. McAlister (London, 1973)). Brentano detected in Aristotle this idea of the 'mental inherence' of objects of thought and sense-perception, and he cited some of the same passages as before. The first publication merely spoke of colours and temperatures being in the perceiver as objects (*objectiv*). The later publication filled this out, finding in Aristotle objects of the kind which Brentano believed characteristic of mental acts. In connection with sense-perception, Brentano cited as evidence for his interpretation Aristotle's theory that the sense-organs 'receive form without matter' (*De An.* 424a 18, b 2, 425b 23, 427a 8, 429a 15, 434a 29, 435a 22), the claim that using one's senses is not the ordinary kind of *paschein* (*De An.* 417b 2–7), and the claim that the actualized object of sense is within the sense (*De An.* 426a 2–4).

Of the three Aristotelian ideas that Brentano cites, the first two are used also by Barnes *op. cit.* n. 1 below, p. 38), but neither idea seems to prove the point. I have already commented on the second (p. 166 above). The first concerns receiving form without matter. It is nearly²⁷ always the sense-organ, or the perceiver, not the sense, that is said to receive form without matter. Brentano takes it in his first publication that this reception of form involves the object of perception being present in a non-physical way (pp. 80–1, 86), and Barnes, following him, holds that it introduces a non-physical component into perception. But there is good reason²⁸ to interpret the reception of form without matter physiologically. It means that, for instance, the organ of sight (i.e. the jelly inside the eye; see n. 22) takes on the colour of the object seen, without taking on any material particles from the object, such as Empedocles and Democritus had postulated. In that case, in talking of the organ's reception of form without matter, Aristotle is so far talking only of the physiological process.

The third Aristotelian idea that Brentano cites suits his case best. For Aristotle does say that the actualized object of sense inheres in the sense (if we read *tēi*, the organ, at 426a 4), and he adds that the actualized object of sense lasts only as long as the act of sensing (426a 15–26). This fits with Brentano's first, and

less explicit, claim that the object of perception for Aristotle is in the perceiver in a non-physical way.²⁹ But Brentano's later interpretation seems wide of the mark. For Aristotle does not agree that the object of sense need not have real existence outside the mind. On the contrary, the object of sense in its potential state does exist outside the mind (426a 15–26). Admittedly, Aristotle acknowledges that there are mental states whose objects do not really exist. A wish, for example, can be directed towards something impossible, such as immortality. But this is not true of all mental states, or even of all kinds of desire (EN 1111b 10–30).

(vii) *The contrast with materialism.* Having failed to align Aristotle with Descartes or Brentano, we should not swing to the opposite extreme and treat him as a materialist. The fullest case for doing so was made by Slakey (see n. 1). But unfortunately Slakey rested his case mainly on an interpretation of *De An.* 423b 27–424a 10 which I believe to be mistaken. In this passage, Aristotle says that *aisthēsis* is a mean or mid-point (*mesotēs*). Slakey takes this to mean that sense (the capacity to perceive) is the capacity of the organ to change to one extreme or the other, to hot or to cold for example. He infers that sensing will simply be the process of the organ's changing to hot or to cold. There are several objections to this interpretation.

First, when Aristotle talks here of *aisthēsis*, he seems to be concerned not (or not directly) with sense, as Slakey requires, but with the sense-organ.³⁰ For he describes it as changing temperature (424a 6–10). Second, even if he had been directly concerned with sense, he would in any case have been assimilating it hereby to the organ, and not, as Slakey suggests, to a capacity of the organ. Aristotle, I believe, is concerned in particular with the organ of touch. He argues that this organ cannot lack temperature (etc.), in the way that the eye-jelly lacks colour. (This is the relevance of 423b 27–31.) He also argues that its natural temperature is an intermediate one, midway between hot and cold. (This is why he calls it a mean or mid-point, 424a 4.) That its normal temperature is a mean one is inferred from the supposed fact that we have a blind spot for mean temperatures (*alla tōn huperbolōn*, 424a 4). The inability of plants to perceive is explained (424b 1, 425a 20–b 3; cf. 434a 27) as due to their lack of an organ of touch, which is in turn

due to their being too earthy and cold to have an organ with a mean temperature. We can thus explain three things which Slakey could not account for (for a fourth, see n. 28). We see first why Aristotle uses the word *mesotēs*, which means 'mid-point'; second, how he accounts for the insensitivity of plants; and, third, what relevance he sees in lines 423b 27–31.

But even if this particular passage does not support Slakey's materialist interpretation, we ought to take his suggestion seriously. For we could well expect Aristotle to be a materialist, seeing that so many of his predecessors were preoccupied with the physiology of mental acts. Many of their statements, at least if taken in isolation, could suggest that mental occurrences are simply physiological entities. And Aristotle, along with his successor Theophrastus, and later commentators who drew on Theophrastus, often interpreted early writers in this sense.³¹ Moreover, many of Aristotle's own remarks, if taken in isolation, seem to suggest a materialist view. Of sense-perception he says that it is a matter of being affected by something, that it is a change in the body, that it is a qualitative change, and that a certain change in the eye is seeing.³²

Even more striking is his treatment of memory-images and dream-images in the *De Memoria* and *De Insomniis*. We are given every reason to think that Aristotle is discussing what we should call a mental image. It is a *phantasma*, is in our soul, and is contemplated by us.³³ Nonetheless, at the same time, he gives this image a very physical interpretation, insisting, for example, that the surfaces within the body must not be too hard to receive it (*Mem.* 450a 30–b 10), and implying that the image does not depend for its existence on being perceived.³⁴ At *Insom.* 462a 8–12, he says that we can confirm that we observe processes in our sense-organs, if we attend to what happens when we are going to sleep or waking up. For sometimes on waking up we can surprise the images (*eidōla*) that appear to us in sleep, and find that they are processes in our sense-organs.

But these statements should not be taken in isolation. They must be read against the background of Aristotle's full theoretical statements in the *De Anima*. The two main theoretical statements are very prominently placed. One comes in the opening chapter of the first book (403a 3–b 19), the other in the closing chapter of the second book, where it rounds off the discussion of the five senses (424b 3–18). We should remember

these full explanations when we encounter the more hasty expressions which we have been looking at. Of the two theoretical statements the first is that which says that the physiological process is only the material cause of anger. There is also a formal cause. The second is that which says that smelling is something else besides (*para*) the process of being affected by odour.

The materialist interpreter may take heart upon seeing that Aristotle uses the very same kind of analogy as some modern materialists have used. Anger is a physiological process in much the same sense as a house is a set of bricks. Some modern materialists have offered the analogy of a bucket of water *being* a set of H₂O molecules. But Aristotle is more accurate than these materialists. For they want to say that mental states may be *identical* with physiological processes. Aristotle sees that, at least for some purposes, it is misleading to say that a house is *identical* with a set of bricks, and in general that a thing is *identical* with its matter. He denies that the syllable BA *is*, or is *identical (to auto)* with, the constituent letters, or that flesh *is* its constituent elements. And he gives the excellent reason that the components can outlast the compound. Bricks can outlast the house.³⁵ The same reason has recently been given by Professor Wiggins for distinguishing between the relation of identity and the relation of composition.³⁶ By noticing that, at least for some purposes, it is wrong to say that a thing is identical with its components, Aristotle improves on some present-day materialists, and on Descartes.³⁷ He often relaxes his ban on saying that a thing *is* its matter. Very occasionally (in another kind of context, and for another purpose) he even lets us say that a thing is *one* with its matter (or rather he says that this way of speaking is 'better' than certain others he has been describing, which need not mean that it is in every respect alright, *De Gen.* 320b 12–14; cf. *Phys.* 190a 15–16). But the important point is that he also has strong reasons against saying that anger is identical with, or one with, a physiological process. And this differentiates him from the modern materialists mentioned.

There are other contrasts too. Aristotle would not agree that perception is *simply* a physiological process. For this 'simply' (Slakey's word) would ignore the formal cause. A house is not *simply* bricks; it is also a shelter. And this further description is a very important one. Indeed, the formal description of

perception is, if anything, more important than the material description. For the body exists for the sake of the soul, in the sense that there would be no point in the existence of bodies and bodily processes, but for the existence of souls and soul states (*De An.* 415b 15–21). Aristotle would reject the view of some materialists³⁸ that talk of sensations or houses could be replaced by talk of physiological processes or bricks without impairing our ability to describe and explain. Formal descriptions cannot be replaced by material descriptions in this way.

It should now be clear why Aristotle disapproves of Empedocles and Democritus for making perception into a mere qualitative change (*Meta.* 1009b 13). It also should be clear how we are to interpret the statements quoted earlier where Aristotle seems to talk as if perception or images were physiological processes. They are indeed physiological processes in a way, but only in a sense of ‘are’ which does not mean ‘are identical with’, and with the proviso that they are not ‘simply’ physiological processes.

Aristotle’s use of the matter/form distinction in his psychology has been called a strain, a misfit and an obfuscation.³⁹ But it has the merit of steering us away from the idea that mental states may be *identical with*, or may be *simply*, physiological processes.

(viii) *What is the formal cause of desire?* A certain question now becomes urgent. We have seen that anger and smelling are not ‘simply’ physiological processes. But we have also seen that, whatever else they are, the something else cannot be a further component. Nor can it be a Cartesian act of mind. What else, then, can anger and smelling be? The further description should presumably be parallel to the description of a house as a shelter.

Aristotle tells us that anger can be further described as a desire to retaliate, and smelling as an awareness of odour (*De An.* 403a 25–b 9, 424b 17–19). But neither answer is very helpful to people with our interests. For the new terms (‘desire’ and ‘awareness’) are, like the original terms (‘anger’ and ‘smelling’), the names of *pathē* of the soul. They therefore invite the same question all over again: ‘What else are desire and awareness, besides physiological processes?’ We would like a description that differs in kind, and is not simply the name of a *pathos*. Unfortunately, Aristotle has not addressed himself to

this question. In what follows we can do no more than ask whether what he says provides the *materials* for an answer. I propose to take the example of desire.

On the material description of desire we are well informed. According to *De Motu* 6–10, it is a process of heating or cooling, which results in expansion or contraction of the gaseous stuff called connate spirit, and of the organs, and hence eventually leads to limb movements. The change of temperature involved in the desire to retaliate is not a second physiological process additional to the boiling of the blood around the heart (the material cause of anger). ‘Change of temperature’ is simply a more general description of the same process.

But what is the formal description of desire? Aristotle places a strong emphasis on the connection between desire and *action*. One of the most interesting passages is the analysis of abilities in *Meta.* IX, 5. After analysing non-rational abilities, such as the ability of fire to burn, he passes on to rational abilities, such as the ability to heal. These latter are connected with desire. Thus one who is able to heal under appropriate conditions necessarily (1048a 14) will heal, if (a) he wants to; (b) of the two results, healing or withholding health, this is the one he wants predominantly; (c) he is in the appropriate conditions (e.g. he is in the presence of the patient, the patient is in a suitable state, and there are no external obstacles to action).⁴⁰ Although Aristotle’s interest is in the notion of ability, his account commits him to a certain view of desire. For it implies that if a man desires to heal, and the desire to heal predominates over any desire to withhold health, then necessarily he will heal, provided (i) he has the ability to heal under appropriate conditions, and (ii) he is in those conditions.

A similar view is expressed in Aristotle’s account of *akrasia* or weakness of the will (*EN* 1145a 15–1152a 36). He distinguishes between two kinds of weak-willed man. One such man has not deliberated at all (*EN* 1150b 19–22, 1151a 1–3, 1152a 19, 27–8). But one has deliberated about the best means to achieve his ends: for example, about how best to keep fit. And having decided that a diet of chicken is the best means, he has come to want a diet of chicken.⁴¹ The discussion, then, presupposes a man who desires some end, such as health, has worked out the best means to it and desires to pursue that means. A man with such a desire, we are told, will necessarily

(1147a 27, 30) act accordingly and take some chicken, provided that (i) he has the ability (1147a 30); (ii) he is not prevented (1147a 30–1); (iii) he is fully aware of the relevant observational facts (1147a 25–6, 29–30, b 9–12), such as ‘this is chicken’; (iv) he links these facts to the fact that eating chicken is good for the health (1147a 26–7). Aristotle has added in (iii) and (iv) two extra conditions that were not mentioned in the *Metaphysics*. But the upshot of the two passages is the same: namely that, in certain circumstances, desire necessarily (1048a 14, 1147a 27, a 30)⁴² leads to action.

Aristotle links desire and action again when he says (*EN* 1139a 31–2) that the efficient cause of *praxis* (deliberate action) is *prohairesis* (a certain kind of desire). More generally, the efficient cause of animal motion is desire.⁴³ Neither these nor the preceding statements are offered as providing an analysis of desire. And in some cases the link between desire and action will be more indirect than that described here. For example, Aristotle distinguishes between *boulēsis*, desire for an end such as health, and *prohairesis*, desire for something in our power which we have calculated to be the best means (in our earlier example, desire for a diet of chicken). Desire for the end, coupled with calculation, is said to be the efficient cause of desire for the means. And it is only desire for the means that is directly an efficient cause of action (*EN* 1139a 31–3). Desire for the end, Aristotle explains, may be directed towards things which are not immediately in our power, such as health, or towards things which we cannot bring about by our own efforts, such as victory for some athlete, or even towards things altogether impossible, such as immortality (*EN* 1111b 19–30).

Perhaps we now have the materials for conjecturing what Aristotle might say if asked for a formal description of desire. Would part of his answer be that desire is, in certain conditions, a necessitating efficient cause of action? By ‘action’ I mean not merely *praxis*, deliberate action, which is confined to humans, but the various doings of humans and animals. The statement of conditions would include such provisos as that action is in our power, and that we are fully aware of the relevant observational facts. This could not be more than part of Aristotle’s answer.⁴⁴ Another part would be that every desire has a final cause (*De An.* 433a 15). This is the object of desire. And desire, like other activities of the soul, must presumably be defined by reference

to its final cause (*De An.* 403a 27), and its objects (*De An.* 415a 20–2, 418a 7–8). Putting this together, we get a fuller, though no doubt still an incomplete, answer to our question ‘What else is desire, besides a process of heating or cooling?’ The answer is that desire has an end, and is, in certain conditions, a necessitating efficient cause of our acting towards that end.

If this conjecture is accepted about the formal description of desire, we can draw conclusions for anger, which is a kind of desire. Anger will be not only a physiological process, but also an efficient cause of retaliation. And we can draw conclusions also for certain other *pathē* of the soul. For loving and hating are listed as *pathē* in the *Rhetoric*, and are there treated like anger as being desires (1380b 35, 1382a 8). They are wishes for good or for harm towards another person. We can expect, again, that they will be efficient causes of corresponding actions.

Our expectation that loving will be connected with action is confirmed in the *Rhetoric* passage. For Aristotle describes loving not only as wishing good to another person, but also as being a doer of good to him, so far as possible (1380b 35).⁴⁵ But there is something here that we did not quite expect. Aristotle does not say that loving is an efficient cause of doing good to someone. He says that it is being a doer of good to him: that is, presumably, it is a tendency to do good to him. Modern discussions have suggested that there is a big difference between a mere tendency to do good and an actual cause of doing good. Perhaps Aristotle does not see a distinction here. We shall return to this question shortly.

Though loving is classed as a *pathos* in the *Rhetoric*, friendship is assimilated to a *hexis*, or long-term state, in the *Nicomachean Ethics* (1157b 29). (For the difference between *pathos* and *hexis*, see n. 13.) It need be no less true of *hexeis* than of *pathē* that some are connected with action. Examples of *hexeis* are the virtues and vices discussed in the *Nicomachean Ethics*. And these are connected not only with *pathē*, but also with action, according to *EN* 1106b 23–8. For example, hot temper is not only a matter of being ill-disposed in relation to the *pathos* of anger; it also manifests itself in action in various ways. Consequently, a large number⁴⁶ of the virtues and vices are analysed by reference to action, and not, or not only, by reference to *pathē*. In many cases, *hexeis* and *dunameis* (capacities) are described not as mere tendencies to act, but as

efficient causes of action, and as things 'from which' and 'through which' we act.⁴⁷

If we have not gone too far beyond Aristotle's text, in our speculations, we now have some sort of answer to our question. The answer will only apply to desire and to some *pathē* or *hexeis* of the soul. For Aristotle shows no interest in connecting all *pathē* or *hexeis* with action towards an end. But at least for desire we can suggest a formal description which is not merely the name of another *pathos*.⁴⁸ The description is that desire has an end and is (with appropriate qualifications) an efficient cause of action towards that end. If this is the sort of thing that Aristotle would say, we can now understand how he can hold that desire is something else besides a physiological process, without thinking that the something else is a further component, and without thinking that the something else, or the desire itself, is a Cartesian act of mind.⁴⁹ Our suggested further description of desire is rather like the description of house as a shelter, in that it does not name either a component or a Cartesian act of mind.

(ix) *The analogy with plant growth and elemental motion.* We can now return to the point made earlier that Aristotle stresses the continuity between processes in plants and processes in humans. Desire is treated as parallel to the growth of a plant. Neither is called mental. But just as the growth of a plant is not simply a physical process, but also a development towards an end, so desire is not simply a physical process, but also an efficient cause of action towards an end. We can also see more clearly the analogy between desire and the *nature* of the lifeless elements. Just as desire is an efficient cause of action towards an end, so the nature of a stone, according to the conception of nature in *Phys.* II, 1, is an internal cause of its moving downwards towards an end.

(x) *The contrast with Ryle.* We must ward off a final danger. We have seen that in his divergence from Descartes Aristotle does not side with the materialists, or with Strawson. But it may now appear (and it has been suggested in recent literature)⁵⁰ that Aristotle takes the same path as Ryle; for Ryle, like Aristotle, stresses the links between the mental states and action. This would be a mistake for at least two reasons. First, Aristotle has no general programme for analysing mental states by reference

to action. He makes the link only in some cases. Second, in *The Concept of Mind* Ryle analyses many mental states as dispositions or tendencies to act, and he argues that dispositions or tendencies are not causes of action. D. M. Armstrong opposes Ryle in *A Materialist Theory of the Mind* (pp. 85–8). He claims that a disposition necessarily has a ‘categorical’ basis (cf. Aristotle’s boiling of the blood around the heart), with which it can be identified (Aristotle would reject the talk of identification). It is, Armstrong says, in virtue of the categorical basis that the disposition can be a cause of action. While Aristotle would not entirely side with either party in this controversy, some of what he says is closer to Armstrong. For he does speak of desire, and of various *hexeis* and *dunameis*, as efficient causes of action. And he might well agree that desire is an efficient cause of action partly because of its physiological basis.

(xi) It is tempting, when Aristotle says that anger and smelling are something else besides a physiological process, to suppose that the something else can only be a Cartesian act of mind. Conversely, if one notices that he postulates no such act of mind, it is tempting to suppose that he must be a materialist. If one notices that these are not the only possibilities, the next temptation is to hunt among other current anti-Cartesian views and to try to match Aristotle with one of them (with Ryle’s or Strawson’s perhaps). But so long as commentators hope to fit Aristotle into pigeon-holes of more recent make, they will continue to come out with such widely divergent interpretations as the ones we noted at the beginning.

2. IMPLICATIONS FOR MODERN PHILOSOPHICAL PROBLEMS

Aristotle’s view of the body/soul relation has implications for various modern problems. Some of these problems arise for Aristotle only in a different form, and some do not arise at all. They do not arise for a number of reasons, as we shall see, but often because Aristotle’s view of the body/soul relation *prevents* them from arising.

(i) One problem that has troubled modern philosophers is the problem how a mind can possibly move a body. On Descartes’s view, as we have seen, this involves interaction between two

things that have no 'affinity' with each other. Aristotle is interested in the method by which the soul moves the body. In Book I of the *De Anima*, he attacks accounts which made the soul into a gas, or other kind of other spatial entity, that moves the body by pushing or pulling. Aristotle's biological concept of the soul is not, as we have seen, the same as modern concepts of mind. But he comes fairly close to modern preoccupations in the *Physics*, when he worries about how the soul can move the body conformably with his principles of causation.

One such principle is the time-honoured requirement, first explicitly formulated by Aristotle himself, of no action at a distance.⁵¹ In Aristotle's version, the principle says that what acts and what is acted on must be in contact. This in turn is interpreted as meaning that they must have their extremities or edges together. And 'together' is glossed as 'in one immediate place' (*Phys.* 226b 21–227a 7). But if a soul is not corporeal (*De An.* 414a 20), nor spatially extended (*De An.* 407a 2–3), it can have no edges. So how can it act on a body? Instead of concluding, like the Epicureans and Stoics,⁵² that since body and soul do interact, the soul must be corporeal, Aristotle appears to be embarrassed into modifying his requirements of contact. At any rate, we find him suddenly switching at *Phys.* 243a 3–6, 32–5 to the weaker principle⁵³ that what acts and what is acted on should be together, which is explained as meaning that there should be nothing between them. There is no reference to contact or to edges. And when we ask why not, we notice that he is going on to discuss the case of animals who move themselves (243a 11–15, 21–3). Now that his requirement is weakened, he is able to say that animals satisfy it. For what acts (and I take it he means the soul) is together with what is acted upon (and I take it he means the body), since the former is, in a certain sense, *in*⁵⁴ the latter, so that there is nothing in between them. Once again,⁵⁵ the *Physics* account of the soul seems to involve hasty improvisation.

By the time he came to write the *De Anima*, Aristotle would have had the means for showing how the stronger contact requirement is satisfied. And he might also have been in a position to answer modern perplexities about the mind moving the body, if he had further exploited his semi-physiological analysis of desire. Desire, as we have seen, is a physiological process of heating or cooling. And it is not philosophically

puzzling how heating or cooling, by causing expansion or contraction, can lead to bodily movement. The details of the mechanism are given in *De Motu* 6–10. At no stage does the process violate Aristotle's requirement of contact, and at no stage do we have the Cartesian problem of interaction between two things that have nothing in common. That desire should cause movements is no more (and no less) puzzling than that heating around the heart should cause expansion. But if desires lead to movement, then there is a sense in which the *capacity* for desire is responsible for movement. For, as we have seen, the soul is a set of capacities, such as the capacity for desire.

Admittedly, in appealing to heating or cooling, we have not given a complete account of how the body is moved. For all non-compulsory animal motion is for an end (*De An.* 432b 15). If we want a full explanation of animal motion, we shall have to appeal to this end, which is the object desired. But the end is a final, not an efficient, cause. So it does not raise the Cartesian problem of one thing acting as *efficient* cause upon another with which it has no affinity. Nor does it violate Aristotle's contact requirement, for this requirement too applies only to efficient causation (cf. *De Gen.* 323a 25–33).

(ii) We have been talking about how the soul acts on the body. But there is also a problem for modern Cartesians about how the body acts on the soul. How can a physical process in the eye lead to seeing? W. D. Ross (see n. 1 below), speaking of the physical process in the eye, says: 'it does nothing to explain the essential fact about perception, that on this physical change supervenes something quite different, the apprehension by the mind of some quality of an object'. Earlier on the same page, he speaks of 'the distinctively mental, non-corporeal nature of the act', and of 'a purely mental activity having nothing in common with anything physical'. For Aristotle, however, there is no question of how an act in the body can lead to a purely mental activity. For one thing, 'lead to' is not the right description, he would say, of the relation between the physical process and the apprehension of colour. Bricks do not 'lead to' a shelter, though they are necessary (*De An.* 403b 3; *Phys.* II, 9), if a shelter is to be realized.⁵⁶ For another thing, it is not a purely mental activity for which the physical process is necessary, either in the case of seeing or in the case of desire. The physical process is

necessary for the realization of the formal cause. In the case of desire, I suggested, the formal cause is not a purely mental activity, but is having an end and being an efficient cause of action towards that end.⁵⁷

(iii) Aristotle's comparison of anger with a house has implications also for present-day questions about the predictability of states of mind. If I can predict what bricks there will be in the world, it does not follow that I can predict whether there will be houses. For that, I should need to know at least how the bricks were arranged, and perhaps also that the arrangements had at some time been used, or intended for use, as shelters. Equally, if I predict what physiological processes will be going on, it does not follow that I can predict whether people will be angry.

(iv) Throughout the discussion so far, I have been guilty of an over-simplification. For I have spoken as if Aristotle were giving a purely physiological description, with no implications for the mind, in his talk of the boiling of the blood around the heart. But in fact he is so impressed by the importance of the thing's function, that he believes a non-functioning heart, or non-functioning blood, is not a heart, or blood, in the proper sense of the word. This theory is applied to the body as a whole, and to many of its components.⁵⁸ Aristotle thus gives to the heart or eye a treatment that would be more appropriate for a scrap of paper used as a bookmark. The scrap becomes a bookmark, when so used, and ceases to be a bookmark when discarded. When it lies in the waste-paper basket, there is nothing distinctive to connect it, rather than thousands of other objects, with bookmarking; its use alone made it a bookmark. Contrast the severed hand or eye. This still has a distinctive structure to connect it with its former activities, and so it should still (*pace* Aristotle) qualify as a hand or eye in the primary sense.⁵⁹ This is not to deny the importance of function. Structure alone, unconnected with function, cannot make something an eye in the primary sense: the eye of a peacock's tail is not. But by making the link between the flesh and its function so tight, Aristotle runs into Ackrill's objection (cf. J. L. Ackrill, 'Aristotle's definition of *psuchē*', *Proceedings of the Aristotelian Society* 73 (1972–3), 119–33 and reprinted in *Articles on Aristotle*, eds J. Barnes, M. Schofield and R. Sorabji, vol. 4: *Psychology and*

Aesthetics (London: Duckworth, 1979), chapter 4), that he is unable to pick out the matter in which soul resides in such a way that that matter could be conceived as existing without soul. If he had made the link looser, in the way recommended, he might have been able to avoid this objection.

For our purposes, the interesting thing is the implications of Aristotle's theory for the problem of other minds. If true, the theory would mean that the sceptic who doubts his knowledge of other minds cannot express his doubts by saying 'I see many eyes around me, but I do not know whether they see. I see many bodies, but I cannot tell whether they feel.' According to Aristotle, in admitting the existence of eyes and bodies he is admitting the existence of sight, which is the function of eyes, and of touch, the distinctive power of animal bodies.

It is interesting to find a similar argument put forward in recent articles by Douglas Long and by John Cook.⁶⁰ Long points out that the sceptical doubt is often expressed as a question as to whether certain bodies are associated with minds. He claims that such philosophers as Price, Broad and Strawson have assumed the existence of other bodies in their discussion of the problem. And this assumption, according to Long, already implies the existence of other minds. So much is reminiscent of Aristotle. Long and Cook go further, and suggest that the sceptic cannot even reformulate his position.

It never occurs to Aristotle to raise doubts about other minds. Such doubts would fit very badly with his teleological attitude. If there were many 'eyes' around, but they had no sight, and many 'bodies', but they had no sense-perception, then nature would have acted in vain. For, as he says, the body exists for the sake of the soul (*De An.* 415b 15–21). There would be no point in the existence of bodies if there were no souls. Doubts about other minds would also fit badly with his dialectical method, the method of starting from opinions that have been accepted by *others*, and salvaging as much as can be freed from objections (*EN* 1145b 2–7, 1146b 6–8).

For Aristotle, seeing is, among other things, a physiological process, the coloration of the eye-jelly. And this process can in principle, even if not in practice, be observed by others. So there is an answer to the question how one can possibly know that another person is seeing. One can in theory observe the fact. Perhaps it will be objected that to observe the coloration of

another man's eye-jelly is to observe only the material cause of his seeing, not the seeing itself. But this objection fails to do justice to Aristotle's position in two ways. First, in Aristotle's view it is by this means that one is aware of one's own seeing (p. 169 above). One perceives its material cause, the coloration of the eye-jelly. Second, it should not be supposed that after one has observed the physiological process there is some purely mental act still waiting to be detected. The formal cause of seeing will not be, and will not involve reference to, a purely mental act, one having no 'affinity' with bodily acts. There are no such acts. If there had been, the sceptical doubt would have been easier to raise. As it is, we have not discussed the formal cause of seeing, but we have suggested that the formal cause of desire is having an end and being an efficient cause of action towards that end. And this is something with regard to which it is not indeed impossible, but certainly much harder, to raise a plausible doubt.

Aristotle is so far from entertaining doubts about other minds that, in his discussion of friendship he almost reverses the sceptical position. Some of the benefits of friendship arise from the fact that it is easier to contemplate others than to contemplate ourselves (*EN* 1169b 33–5).⁶¹

POSTSCRIPT – 1992

Although I stand by most of what I originally said, I would now give a different emphasis to three points.

First, my paper has been widely taken to endorse a functionalist reading of Aristotle's philosophy of mind. But I do not think that Aristotle himself would value the idea of specifying the formal cause of desire or perception in a functionalist manner as the cause of certain behaviour or, for that matter, behaviouristically as a disposition to behave in certain ways, or physicalistically as a physiological process. Instead he tries to clarify the formal aspect of a mental state by relating it to other mental states and capacities at the *same* level, not by reducing it to physiological processes or behavioural dispositions, or functions at a *different* level. For example, I have tried to show how Aristotle seeks to explicate the formal cause of perception by relating it to belief, reason, appearance, memory experience and concept possession. See my 'Intentionality and physiological

processes: Aristotle's theory of sense perception', in *Aristotle's 'De Anima'*, eds M. C. Nussbaum and A. O. Rorty (Oxford: Oxford University Press, 1992).

Admittedly, recent versions of functionalism present pains and other feelings as causing, or justifying, not only behaviour but also *beliefs*. But this would still seem to Aristotle (and I agree) to have two disadvantages. First, many more animals fully share with us pains than fully share with us beliefs. Second, Aristotle considers many other relations among mental states besides the causal and the justificatory. (See my *Animals: The Origins of the Debate on Mind, Morals and Mankind*, Townsend Lectures, forthcoming.)

Second, in the 1992 paper, I have defended my claim that Aristotle's talk of the reception of form without matter and of becoming like refers to the material cause of perception, that is to the physiological process and not to the formal cause. And I have traced the origin of the rival interpretations in a related paper, 'From Aristotle to Brentano: the development of the concept of intentionality', in *Oxford Studies in Ancient Philosophy*, eds H. J. Blumenthal and H. Robinson (Oxford: Oxford University Press, 1991).

Third, I would now emphasize that according to the viewpoint most fully expressed in *De Gen. An.* 5.8, physiological processes, in Aristotle's view, tell us how, rather than why. Consequently, the physiological processes involved in desire, for example, will only tell us *how* a man moves his limbs. (See further my *Necessity, Cause and Blame* (London: Duckworth, and Ithaca, NY: Cornell University Press, 1980), chapter 10.)

NOTES AND REFERENCES

- 1 Thomas Slakey, 'Aristotle on sense perception', *The Philosophical Review* (1961), 470–84. Wallace I. Matson, 'Why isn't the mind-body problem ancient?' in *Mind, Matter and Method*, eds Feysabend and Maxwell (Minneapolis: University of Minnesota, 1966), p. 93. Friedrich Solmsen, 'Greek philosophy and the discovery of the nerves', *Museum Helveticum* (1961), 150–97 (p. 170), who claims: 'Nor does the "common sense" which receives, collects and synthesises depend for its function on any physiological process.' He does, however, find (and write illuminatingly about) a physiological process that occurs at a different stage in perception. R. D. Hicks, *Aristotle 'De Anima'* (Cambridge: Cambridge University Press, 1907), p. 563; Jonathan Barnes 'Aristotle's concept of mind',

- Proceedings of the Aristotelian Society* (1971–2) repr. in *Articles on Aristotle*, eds Jonathan Barnes, Malcolm Schofield and Richard Sorabji (London: Duckworth, 1979), vol. 4; G. R. T. Ross, *De Sensu et Memoria* (Cambridge: Cambridge University Press, 1906), pp. 5–7; W. D. Ross, *Aristotle* (London: Methuen, 1923; Meridian Books edn, 1959), p. 136.
- 2 *De An.* 412b 17–413a 3. Willie Charlton and Professor Wiggins have pointed out that Aristotle sometimes thinks of the soul as that which *has* capacities, i.e. the person (W. Charlton, *Aristotle's Physics Books I and II* (Oxford: Clarendon Press, 1970), pp. 70–3; D. Wiggins, *Identity and Spatio-Temporal Continuity* (Oxford: Blackwell, 1967), part 4, sec. 2). This observation is illuminating, especially for the study of *Meta.* VII. But it must be insisted that sometimes, and in the *De Anima* often, Aristotle thinks of the soul as being the capacities themselves. He is not thinking of the soul as that which *has* capacities, when he says that a person is angry with his soul (4018b 1–15), or that the soul is the cause of living, and the efficient cause of perception and growth, and that only what partakes of soul perceives (415b 8–28).
- 3 It is easy to understand Aristotle's idea that our capacity for desire explains our moving from place to place (*De An.* III, 9–10). But it is harder to see how the capacity to perceive can *explain* our perceiving, or how the capacity to retain a certain distinctive organization while we grow can *explain* our retaining this organization while we grow (*De An.* 415b 23–8, 416a 8–9, b 21–2).
That the soul is a cause (415b 8–28) helps to explain why Aristotle could not accept the view, which is often said to be like his, that the soul is related to the body as is its harmony to a lyre (407b 27–408a 30). A harmony is not a causal agent in the right way.
- 4 Reply to objections brought against the 2nd *Meditation*, §4, in the 5th *Objections*, translated Haldane and Ross, vol. 2, p. 210.
- 5 Plato, *Timaeus* 77 A–B. Empedocles believed he had in a previous incarnation been a bush (fragment 117 in Diels, *Die Fragmente der Vorsokratiker*). It may have been because of his belief that souls could be reincarnated in plants that Empedocles forbade eating of beans (fr. 141). But members of the Orphic sect allowed that some or all vegetable food lacked a soul (Euripides, *Hippolytus* 952).
- 6 Plato, *Timaeus* 77 A–B. Put into the mouth of Protagoras by Plato, *Theaetetus* 167B; asserted, if we can believe our later sources, by Empedocles, Democritus and Anaxagoras (see pseudo-Aristotle, *De Plantis* 815a 16, b 16; Sextus Empiricus, *Adversus Mathematicos* VIII, 286, using as evidence Empedocles, fr. 110; cf. fr. 103).
- 7 See, e.g., *De An.* 416a 6–9. A plant also produces seed for the next generation. And this must be done by converting the nutrient it draws from the soil (see *De Gen.* I, 5; *De An.* II, 4). An excellent account of Aristotle's biological extension of the concept of the soul is given in F. Solmsen, 'Antecedents of Aristotle's psychology and scale of beings', *American Journal of Philology* 76 (1955), 148–64.

- 8 A major function of the soul, among early Greek philosophers, was to cause motion (*De An.* 403b 26, 405b 11, 409b 19). Did the soul always cause motion by means of some mental activity? Aristotle implies not in the case of Democritus (*De An.* 406b 24–5), though in this particular instance Aristotle’s testimony is suspect. According to another conception, the function of the soul was not connected with consciousness in this life, but was simply to survive, perhaps with a very low level of consciousness, when a man died (see R. B. Onians, *The Origins of European Thought* (Cambridge: Cambridge University Press, 1951), for such a conception in Homer). For Plato, one function of the soul was to cause motion, but it caused motion by means of some mental activity (*Laws* 896E–897A). I do not believe that *Timaeus* 36E says otherwise.
- 9 The *Physics* hints at analogies (192a 22, 250b 14). But it fails completely when it tries to spell out the disanalogies (255a 5–20, b 29–31). A good account of this failure is again given in F. Solmsen, *Aristotle’s System of the Physical World* (Ithaca, NY: Cornell University Press, 1960). According to later writings, desire in animals differs from the nature of a stone, in that it involves a physiological process in virtue of which desire is a cause of motion (*De An.* I, 1; *De Motu* 6–10). It also differs in being intimately linked with other soul capacities, with nutrition, which maintains the organs in the right state, and with perceiving, imagining, conceiving and judging. For (*De Motu* 6–8, 11; *De An.* III, 9–11) an animal must perceive, imagine or conceive the end desired, and, in some cases, the means to its realization. A human being may also make a judgement that the end or means conceived is to be pursued, or not. Desire differs again, in that desires have varying ends (*Meta.* IX, 5; *Cael.* II, 12), some of them conflicting (*EN* VII, 3, Bekker’s numbering), some changeable by training (*EN* II, 1), some being only apparent goods, not real goods (*EN* III, 4).
- 10 In Aristotle, pleasure and pain (*PA.* 666a 12); awareness of memory-images (*Mem.* 450b 14, 16, 18, 28); awareness of one’s own acts of sense-perception (*Som.* 455a 17; *De An.* 425b 12; *EN* 1170a 29–b 1); awareness of being asleep (*Insom.* 462a 3). In other authors, desire, fear and intellectual discernment. Cf. Charles H. Kahn, ‘Sensation and consciousness in Aristotle’s psychology’, *Archiv für Geschichte der Philosophie* 48 (1966), 43–81, repr. in *Articles on Aristotle*, vol. 4 (see n. 1 above). This paper is basic reading for this subject.
- 11 Aristotle does not list this as a distinct sense of ‘is’, when he talks about the different senses of the verb *to be*. But he still treats this use of ‘is’ in a distinctive way. He notes that ordinary speakers prefer to say that a thing *is composed of wood* (*Meta.* 1033a 16–19), or better (1033a 19–22) *is wooden*, rather than *it is wood*. And he has reasons of his own, discussed on p. 175, for doing likewise, and refusing to say that a thing *is its matter* (*Meta.* 1035a 7–10, 1041b 12–16).
- 12 Other examples of *pathē* of the soul are envy, emulation, longing,

shame and shamelessness, kindness and unkindness, and indignation at unmerited prosperity (*EN* 1105b 19–28, 1128b 9–15; *Rhet.* II, 2–11; *EE* 1220b 10–20). The semi-physiological analysis is mentioned also at *Sens.* 436a 6–10, b 1–8; *Mem.* 450a 27–30; *Som.* 454a 7–11, and is connected with yet other mental states, desire in general, pleasure and pain, memory and memory images. For the claim that anger is a bodily process, see *De An.* 403a 26. In making all *pathē* of the soul physiological, Aristotle is rejecting the claims of Plato, *Philebus* 34B, 35C, 47E.

- 13 For the distinction see *EN* 1105b 19–28, 1106a 3, a 5, 1157b 28–31; *EE* 1220b 13–14; *Rhet.* 1378a 20; *Cat.* 8b 26–9a 13, 9b 33–10a 10. *Pathē* of the soul (e.g. anger) are accompanied by pleasure or pain, and affect one's judgement. We are said to undergo change (*kineisthai*) when we have them. They are not the result of deliberate choice. They are comparatively short-lived and easily removed. A *hexis* of the soul (e.g. good temper) is something in accordance with which we are well or ill disposed in relation to *pathē*. A *dunamis* of the soul (e.g. the ability to be angry) is that in accordance with which we are capable of suffering *pathē*.
- 14 For examples, see Theodore Tracy, *Physiological Theory and the Doctrine of the Mean in Plato and Aristotle* (The Hague: Mouton, 1969), *passim*; R. Sorabji, *Aristotle on Memory* (London: Duckworth, 1972), notes on 449b 6 and 453a 19.
- 15 A *pathos* of the soul is an enmattered form (403a 25), just as a house is a form (403b 6). Again, anger is a movement of a faculty (desire?), as well as being a physiological movement (403a 26–7).
- 16 Richard Rorty, 'Incorrigibility as the mark of the mental', *Journal of Philosophy* (1970), esp. pp. 399–406.
- 17 Reply to objection on the 2nd *Meditation*, in the 3rd set of *Objections*, trans. Haldane and Ross, vol. 2, p. 64.
- 18 6th *Meditation*, *ibid.*, vol. 1, pp. 190 and 196; and *Passions of the Soul*, article 30, p. 345.
- 19 Reply to 2nd *Objections*, Definition 1, *ibid.*, vol. 2, p. 52.
- 20 Processes (*kinēseis*) in the sense organs, and images (*phantasmata*) can after all pass unnoticed, according to *Insom.* 460b 28–461a 8, 461a 19–22, and according to an argument (whose conclusion, however, Aristotle rejects) at *Sens.* 447a 12–b 6. Moreover, *Mem.* 451a 2–5 admits that a man may be remembering, in spite of being in doubt whether he is.
- 21 2nd *Meditation*, trans. Haldane and Ross, vol. 1, p. 153; *Principles of Philosophy*, I, 9, *ibid.*, vol. 1, p. 222: Reply to objections on the 2nd *Meditation*, §§ 1 and 9, in the Replies to the 5th *Objections*, *ibid.*, vol. 2, pp. 207 and 213.
- 22 For the view that the organ takes on colour when we see, see *De An.* 424a 7–10, 425b 22–4, 427a 8–9, 435a 22–4, 417a 20, 418a 3, 422a 7, 422a 34, 423b 30, 424a 18, 424b 2, 429a 15, 434a 29. The first four passages suggest a literal taking-on of colour. The theory has been misunderstood by modern commentators. Professor Hamlyn and Jonathan Barnes think such a theory absurd, and

Barnes concludes that Aristotle cannot have held it (cf. D. W. Hamlyn, 'Aristotle's account of *aesthesis* in the *De Anima*', *Classical Quarterly* n.s. 9 (1959), 9 and 11, and *Aristotle's 'De Anima' Books II and III* (Oxford: Clarendon Press, 1968), pp. 104 and 113; Barnes, 'Aristotle's concept of mind', p. 38). But it is the *korē* which takes on colour (*De An.* 431a 17–18; *Hist. An.* 491b 21; *PA* 653b 25), not the eye as a whole, which would indeed be an absurd theory. The theory would still be absurd if the *korē* were the pupil, as all recent English translators of the psychological works suggest (Beare, Hamlyn, Hammond, Hett, Hicks, G. R. T. Ross, Smith). But the *korē* is in fact the eye-jelly inside the eye (*Sens.* 438a 16, 438b 5–16; *Hist. An.* 491b 21; *De An.* 425a 4; *De Gen. An.* 780b 23). And it would not have been obvious, with the instruments available to Aristotle, that the eye-jelly did not become coloured during the process of vision, nor yet (to take another example from Hamlyn and Barnes) that the *interior* of the ear did not become noisy. None of the perceptual organs would have been readily open to inspection during the perceptual process; all were internal.

One advantage of assuming a literal taking-on of colour is that this explains (*pace* Barnes) how shapes and sizes can be received in the organ: the coloured patches in the eye-jelly have shapes and (small-scale) sizes. For further supporting evidence, see n. 28 below.

- 23 This is part of a two-pronged answer to a puzzle set in Plato's *Charmides* 168D–E. Sight cannot see itself, for only what is coloured can be seen. Aristotle replies: (i) sight is not seen but only perceived with the aid of sight; (ii) what is perceived on these occasions (the organ) is coloured, so on this score there would have been no barrier to its being seen.

For further references to the idea that, when seeing, one not only receives, but also perceives processes in one's eye-jelly, see *De Gen. An.* 780b 32, and (in the course of an argument whose conclusion Aristotle rejects) *Sens.* 447a 23–7.

- 24 The *De Anima* suggests that sight plays an indirect role in our awareness of our own seeing, just as it does in our awareness of darkness. We do not *see* darkness, but we are aware of it through trying (and failing) to see *other* things. *De Somno* – supplementing but not, I think, contradicting the *De Anima* – says that we are aware of our own seeing through the central sense faculty (455a 15–25).
- 25 Sorabji, *Aristotle on Memory*, pp. 6–8.
- 26 P. F. Strawson, *Individuals* (London: Methuen, 1959), chapter 3, esp. §§ 5–6.
- 27 The exceptions seem to be cases where Aristotle has misleadingly borrowed the terminology of form without matter, to express the quite different doctrine that the act of sensing is identical with the actualized object of sense.
- 28 Having declined to regard the reception of form without matter as a physiological process, Barnes finds it difficult to attach any very

precise meaning to the idea. In fact, the idea is connected with the organ's becoming like the object perceived (*De An.* 429a 15–16) and with the taking-on of colours or temperatures (see *De An.* 424a 7–10, 425b 22–4, 427a 8–9, 435a 22–4). So it seems easier, and it is also appropriate in the historical context, to interpret the reception of form without matter in our way. This physiological interpretation has the added advantage of enabling us to understand what Slakey could not understand: the second of two explanations at 424b 1–3 of why plants cannot perceive. Plants cannot receive form without matter, i.e. they can only take on colour and warmth by admitting coloured or warm matter. Barnes's reason for refusing to regard the reception of form as a physiological process of the organ changing colour or temperature is that the resulting theory would have been 'open to devastatingly obvious attack' (Barnes, 'Aristotle's concept of mind', p. 38). Our answer to this is given in n. 22 above, where additional evidence is offered for the physiological interpretation.

- 29 Perhaps the actualized object of sense is something that *we* would characterize as mental. And this would support Barnes, provided he does not say that Aristotle himself would conceive the actualized object as mental. It does not support Brentano, however, for Brentano believes that only the sense is mental; its object is physical.
- 30 Either *aisthēsis* refers to the organ here, or, if it refers to sense, the sense is called a mid-point only derivatively, because the organ is one. The sense does seem to be called a blend (*logos*) later at 424a 27, 426a 29, b 3, 7, but the point being made there is a different one which applies to senses other than touch.
- 31 See *Meta.* 1009b 11ff; *De An.* 427a 26, on Empedocles and Democritus. Also Parmenides fr. 6, lines 5–6 and fr. 16; Empedocles fr. 105; Anaxagoras, according to Theophrastus, *De Sensibus* §31; Democritus, according to Aëtius, A.30 in Diels. Some of Plato's *Timaeus* also lends itself to this interpretation. On Homer, see Onians, *The Origins of European Thought*. For Aristotle's interpretation of some earlier views on pleasure, see *EN* 1173b 7–9.
- 32 For these four statements, see (i) *De An.* 424a 1, 427a 9; (ii) *Phys.* 244b 11–12; (iii) *Insom.* 459b 4–5; *De Motu* 701b 18; (iv) *De Gen. An.* 780a 3.
- 33 *Mem.* 450a 25–451a 17; *Insom.* 3. For the word *phantasma*, see *Mem.* 450b 10, b 24, 451a 15 etc.; *Insom.* 461a 18, 462a 16, 29–31. For 'in the soul', see *Mem.* 450a 28, b 10–11, 451a 3. (The expression 'a process of the soul' would have been less significant, since it could have applied to plant growth as well as to a mental entity.) For reference to contemplating and perceiving the image, to taking it as resembling, or identical with, familiar objects, to its appearing and being noticed, see *Mem.* 450b 15–18, 450b 24–451a 2; *Insom.* 460b 10–11, 23–7, 460b 31–461a 8, 461a 19–22, 462a 8–12. The significance of the last point, however, the observability of the image, will be reduced, when we recall that Aristotle

sometimes speaks of our observing physiological processes within ourselves (see p. 169).

- 34 *Insom.* 460b 31–461a 8, 461a 19–22. A physical interpretation suggests itself also when Aristotle says that the changes left behind in us by earlier sense-images are located in the blood in our sense-organs (461b 12, 16–19, 462a 9, 12). They can travel down with the blood towards the heart (461a 5–7, a 28–b 1, b 12). They may collide with each other (461a 10–11), and change their shape (461a 10–11, b 19–21) like the eddies in rivers or like figures in clouds (461a 8–9, b 19–21).
- 35 *Meta.* 1041b 12–16. Cf. also 1035a 7–10: ‘the form, or the thing in so far as it has form, should be said to be the thing, but the material by itself should never be said to be so’. Presumably, in the case of anger the physiological process can occur in sleep, without anger occurring, just as bricks can exist when a house does not.
- 36 Wiggins, *Identity and Spatio-Temporal Continuity*, pp. 10–25.
- 37 Descartes says in the 2nd *Meditation* that he *is* a mind, and in the 6th that he *has* a body. But he also says in the 6th *Meditation*, and elsewhere, that he is *composed of* (compositus, composé) mind and body.
- 38 See Richard Rorty, ‘Mind–body identity, privacy, and categories’, *The Review of Metaphysics* (1965).
- 39 W. F. R. Hardie, ‘Aristotle’s treatment of the relation between the soul and the body’, *The Philosophical Quarterly* 14 (1964), 64–6; Barnes, ‘Aristotle’s concept of mind’, pp. 107 and 36.
- 40 For a modern version of this analysis, see P. Nowell-Smith, *Ethics* (Harmondsworth: Pelican Books, 1954).
- 41 Thus he is described as having deliberated, and as having formed a desire (*prohairesis*) based on this deliberation, but as not abiding by his deliberation and his desire (*EN* 1145b 11, 1148a 9, 1150b 19–22, b 30–1, 1151a 2, a 7, a 26, a 30–5, b 26, 1152a 17, 18–19, 26, 28). The chicken example is derived from 1141b 16–21. For the meaning of *prohairesis*, see *EN* 1112a 18–1113a 14, where it is described as a desire for something in one’s power (and having a chicken diet is presumably in one’s power), which one has calculated to be the best means for achieving one’s end. Desire (*boulēsis*) for the end is attributed to the weak-willed man at 1136b 7, 1166b 8.
- One should not be put off by the statement that the weak-willed man acts without exercising *prohairesis* (1111b 14, 1148a 17). This only means that when he incontinently seizes beef-steak, he has no *prohairesis* for *beef-steak*. He still has his *prohairesis* for *chicken*.
- 42 It would be anachronistic to ask whether the necessity is logical or physical, for Aristotle does not regard these as distinct kinds of necessity (R. Sorabji, ‘Aristotle and Oxford philosophy’, *American Philosophical Quarterly* (1969)). The *De Motu Animalium* provides physiological grounds for postulating a necessity, while *Meta.* IX, 5 provides conceptual grounds – grounds, however, which relate to the concept of ability, rather than to the concept of desire.

- 43 The efficient cause of animal motion is the soul (*De An.* 415b 10, 21–2). It becomes clear that it is in particular one capacity of the soul, the capacity for desire (*De An.* III, 9–10). *De Motu* 6–10 explains the physical mechanism by which desire leads to action.
- 44 It is commonplace to contrast Aristotelian explanations as teleological with Galilean explanations as causal (see Georg Heinrich von Wright, *Explanation and Understanding* (London: Routledge & Kegan Paul, 1971), chapter 1; Charles Taylor, *The Explanation of Behaviour* (London: Routledge & Kegan Paul, 1964), chapter 1). Certainly, Aristotle favoured teleological explanations, but we should not forget (von Wright, p. 92; Taylor pp. 4, 20–5) that he thought teleological explanations compatible with explanations by reference to efficient cause. An action, for example, has some end as its final cause, and some desire as its efficient cause.
- 45 Similarly, kindness (*Rhet.* 1385a 16) is defined by reference to action, as that in accordance with which a person is said to render a kindness.
- 46 Courage, Liberality, Magnificence, Great-Souledness, Friendliness, Truthfulness, Ready Wit, Justice, and the corresponding vices. Also Self-Indulgence, Hot Temper, Friendship, Technical Skill, Practical Wisdom.
- There is a class of virtues (Friendliness, Truthfulness, Ready Wit) in connection with which Aristotle deliberately plays down the role of emotion and emphasizes the role of action. See *EN* 1108a 9–31, 1126b 11–1128b 9 (esp. 1126b 22–3), and William Fortenbaugh, ‘Aristotle and the questionable mean-dispositions’, *Transactions and Proceedings of the American Philological Association* (1968).
- 47 See, e.g. *Phys.* 195a 5–11, b 23–4; *Meta.* 1019a 15–1020a 6; *EN* 1129a 6–21, 1143b 26; *De Gen. An.* 726b 21; *Rhet.* 1366b 9; *De An.* 415b 10, 21–2.
- 48 This is not to deny that the notions of having an end, or of acting towards an end, might turn out to involve some indirect reference to *pathē* of the soul. And I have not made a positive suggestion as to how these further *pathē* might be analysed. But I have said enough to show how Aristotle could analyse desire without making it, or its formal cause, into a Cartesian act of mind, and without making its formal cause into a component.
- 49 D. M. Armstrong, *A Materialist Theory of Mind* (London: Routledge & Kegan Paul, 1968), pp. 11–12, and Barnes, ‘Aristotle’s concept of mind’, ascribe to Aristotle the view that, in so far as a man has a soul, he has some non-physical attributes. Is desire, as here defined, a non-physical attribute? Once we observe that it is at any rate not a mental attribute, by Cartesian criteria, the question loses much of its interest.
- 50 See A. R. White, *The Philosophy of Mind* (New York: Random House, 1967), pp. 46–9: ‘to possess some knowledge is to have a tendency or an ability to behave in certain ways’.
- 51 *Phys.* III, 2, 202a 6–9, VII, 1, 242b 24–7, 59–63, VII, 2; *De Gen.* I, 6. For the history of this variously interpreted principle, see Mary

BODY AND SOUL IN ARISTOTLE

- B. Hesse, *Forces and Fields: The Concept of Action at a Distance in the History of Physics* (London: Nelson, 1961).
- 52 See Lucretius, *De Rerum Natura* III, lines 161–7. Cleanthes (Nemesius, *De Nat. Hom.*, p. 33, in von Arnim's *Stoicorum Veterum Fragmenta* I, p. 518). Iamblichus (quoted in Simplicius' commentary on Aristotle's *Categories*, ed. Kalbfleish, pp. 302, 28ff.).
- 53 For a different improvised attempt to weaken the principle, by reference to a special kind of touching, see *Phys.* 258a 20, with further explanation at *De Gen.* 323a 25–33.
- 54 In a weak sense of 'in', for the soul does not meet Aristotle's requirements for 'being in a place' (*De An.* 406a 12–16). And this is presumably why reference to being in a place is dropped from the modified principle.
- 55 Cf. the attempt to distinguish animal motion from elemental motion: *Phys.* 255a 5–20, b 30–1, referred to in n. 9 above.
- 56 Similarly, heating and cooling (even if they lead to action) do not lead to an efficient cause of action, but are merely necessary for the realization of that cause.
- 57 The formal cause of seeing will be awareness of colour, if seeing is to be treated in the same way as smelling (see p. 167). But the awareness is again not a Cartesian act of mind.
- 58 See *De Gen. An.* 726b 22–4, 734b 25–7, 735a 8; *Meta.* 1035b 16–17, 24–5, 1036b 30–2; *De An.* 412b 20–5; *PA* 640b 34–641a 7; *Meteor.* 389b 31–390b 2; *Pol.* 1253a 20–2.
- 59 It does not need to be transplantable or reversible in order to qualify, as the modified Aristotelian view discussed by Ackrill would suggest ('Aristotle's definition of *psuchē*', pp. 127–8 and 71).
- 60 D. Long, 'The philosophical concept of a human body', *Philosophical Review* (1964); John Cook, 'Human beings', in *Studies in the Philosophy of Wittgenstein*, ed. P. Winch (London: Routledge & Kegan Paul, 1969).
- 61 I acknowledge gratefully the helpful comments of William Charlton, David Hamlyn, Charles Kahn, A. C. Lloyd, A. A. Long, Norman Malcolm and Malcolm Schofield, and of my students, Bill Hartley and Phillipa Mance. The writings which I have found most valuable are: Charles Kahn, 'Sensation and consciousness in Aristotle's psychology', *Archiv für Geschichte der Philosophie* (1966), repr. in *Articles on Aristotle*, vol. 4: *Psychology and Aesthetics*, chapter 1; Friedrich Solmsen, 'Antecedents of Aristotle's psychology and scale of beings', *American Journal of Philology* (1955); Friedrich Solmsen, 'Nature and soul', in *Aristotle's System of the Physical World* (Ithaca, NY: Cornell University Press, 1960), pp. 95–102. I am particularly indebted to Solmsen's article in my section I (iii), and to Kahn's for the contrast with Descartes. I have taken the opportunity of making some revisions in this version and I have slightly curtailed the notes.

RICHARD SORABJI

APPENDIX: NOTE OF LATER RELEVANT
PUBLICATIONS

- 1 *Necessity, Cause and Blame* (London: Duckworth, and Ithaca, NY: Cornell University Press, 1980), chapter 10.
- 2 'Intentionality and physiological processes: Aristotle's theory of sense perception', in *Aristotle's 'De Anima'*, eds M. C. Nussbaum and A. O. Rorty (Oxford: Oxford University Press, 1992).
- 3 'From Aristotle to Brentano: the development of the concept of intentionality', in *Festschrift for A. C. Lloyd: On the Aristotelian Tradition*, eds H. Blumenthal and H. Robinson (Oxford Studies in Ancient Philosophy, supp. vol.) (Oxford: Oxford University Press, 1991).

In 1, I acknowledge that in Aristotle's view physiological explanations tell us only how not why.

In 2, I defend my claim that the reception of form without matter in sense-perception is physiological, and I disclaim an interpretation of the article here reprinted according to which Aristotle would be a functionalist. On the contrary, instead of reducing mental states to being causes of something at a lower level – behaviour – Aristotle throws light on them by relating them to other mental states at the *same* level. He interrelates perception, appearances (*phantasia*), belief (*doxa*), reason, concept formation, memory and emotions, and the interest of his account centres here, rather than in the physiological theory of receiving form without matter.

In 3, I explain why the ancient Greek commentators re-interpreted the reception of form without matter as a non-physiological theory, in order to free Aristotle from certain problems in the *Physics*. They and Avicenna thus gave Thomas Aquinas and Brentano the impression that Aristotle had all along meant it as a theory of intentionality.

VI

ARISTOTLE'S DEFINITION OF SOUL

William Charlton

At the beginning of the *De Anima*, having observed that it is difficult to say even how we should set about enquiring into the soul, Aristotle lists a number of questions:

- (1) To what logical kind of thing does soul belong? Does 'soul' signify a particular individual and a substance, or does it rather express a quality amount or the like? (402a 23–5)
- (2) Is a soul a thing which exists in *dunamis* or rather a kind of *entelecheia* – words usually translated 'potentiality' and 'actuality'? (402a 25–6)
- (3) Is a soul a thing with parts? (402b 1)
- (4) Is all soul the same in kind, or are there different souls, the soul of a horse, the soul of a dog, the soul of a man, and so on? (402b 1–8)

These questions are not answered in Book I, which consists mainly of an examination of the views of other thinkers. (1) and (2), however, are tackled in *De An.* II, 1, and (4) in II, 3. Aristotle decides that the notion of a soul is, *in a way*, the notion of a particular individual and a substance; that it is the notion of an *entelecheia*; and that there are as many different souls as there are kinds of living thing. This paper will be concerned chiefly with the second point, which is, I think, at once the obscurest and the most important.

Aristotle's formal definition of soul, reached through a series of approximations, is translated by D. W. Hamlyn (*Aristotle's 'De Anima', Books II and III*, p. 9) as follows: 'If, then, we are to speak of something common to every soul, it will be the first actuality of a natural body which has organs' (412b 4–6).¹ Anyone looking at this definition with a fresh eye must find it

perplexing. I shall consider three questions. First, why the conditional clause? Surely the definition of any term is expected to capture what is common to everything to which it applies. Second, what is 'first' doing here? Although the word translated 'actuality' is common in Aristotle, it is not used outside this chapter of the *De Anima* with 'first'; nor is it anywhere used with a word meaning 'second' or 'subsequent'. Finally, how are we to understand the word 'actuality'? In ordinary English it has two uses. It is a variant for 'truth' in the phrase 'in actuality' – 'The Loch Ness monster is in actuality a large seal.' It is also used as a variant for 'actual existence': 'His investigation cast doubt on the actuality of any monster in Loch Ness.' It appears to be used in the second way in Hamlyn's translation. But if Aristotle is defining soul as the first actual existence of a natural body with organs, his definition is strange indeed.

The key to the first question lies in Aristotle's claim that 'soul' is a sort of functional term, like 'shape':

It is clear, then, that there can be a unitary account of soul [only] in the way in which there can be a unitary account of shape. There is no shape over and above triangular and the rest, neither is there any soul over and above the ones which have been mentioned Hence it is ridiculous, here or elsewhere, to enquire after the common account, which will not be the account proper to anything which exists.

(414b 20–7)²

The natural questions about shape are questions like 'What is the shape of a claret bottle?'; 'What is the shape of a human skull?'; not 'What is shape?' Aristotle suggests that, similarly, the natural questions about soul are 'What is the soul of a plant?'; 'What is the soul of a man?'; and that 'What is soul?' is something of a linguistic oddity. This suggestion is surprising. The English word 'soul' is not usually thought to be like 'shape'. We do not ask 'What is the soul of a plant?' Rather, we enquire after Socrates' soul as we might enquire after his back or his lumbago. Was the Greek word *psuchē*, which we translate 'soul', used differently? Or is Aristotle mis-describing Greek usage? Or is he proposing a reform of it? I think he is making quite a subtle point about psychological terms.

In the course of the *De Anima*, Aristotle often uses the terms *to aisthētikon*, *to dianoētikon*, *to orektikon*,³ which are most

naturally translated 'thing which perceives', 'thing which thinks', 'thing which is appetitive'. He usually seems to intend them as partial descriptions, or descriptions of parts, of the soul.⁴ We should call them 'psychological terms'. Why? 'Bitch', 'puppy', 'kennel' and 'bark' might be grouped together as canine terms, because in explaining their meaning we should have to mention dogs. Similarly a reason for grouping together a number of terms and calling them 'medical' might be that in explaining their meaning we have to mention disease. Do we, then, group together psychological terms because in explaining their meaning we have to mention things called 'minds' or 'souls'? Aristotle suggests that we do not, that they form a group rather as do 'triangular', 'pyramidal' and 'cuboid'. What links these expressions is not some concept of a single definite thing like a dog or health, but the fact that they are appropriate answers to the same question, 'What shape is it?', or express different values of the same function, *the shape of x*. Psychological expressions are similarly answers to the same question, or signify values of the same function.

If that is right, to give a general account of soul we must say what question soul-expressions answer, or what function it is of which they signify values. In *De An.* II, 1 Aristotle is trying to say just this. His first formulation is translated by Hamlyn. 'The soul must, then, be substance *qua* form of a natural body which has life potentially' (412a 19–21).⁵ That is, soul-expressions are given in answer to the question 'What is its form?', when this question arises about material objects ('bodies') which are natural, i.e. not artefacts, and alive, i.e. not inanimate. The notion of a soul is the notion of the form of a material object of this kind.

What does Aristotle mean by 'form'? He is using a threefold distinction between matter, form and the product of the two which is introduced and explained in the *Physics* and *Metaphysics*. Aristotle distinguishes two kinds of expression, typified by 'concave' and 'snub-nosed'. 'Concave' signifies one definite thing, a shape: to apply it to an object is to predicate that shape of the object. 'Snub-nosed' signifies a pair of things (συνδεδυασμένον, *Meta.* Z 1030b 16), something definite in something definite (1030b 18, 1036b 23–4): to apply it to Socrates is not to predicate something called 'snub-nosedness' of him, but to predicate concave shape of his nose. All sortal terms, Aristotle

thinks, are like 'snub-nosed'. Where *s* is a sortal term, it signifies something definite in, of, or constituted by, something definite. The words 'form' and 'matter' are used to label the elements which appear in the analysis of sortal concepts. If an *s* is an *x* of *y*, *x* is a form-expression and *y* is a matter-expression.

Let me document these points briefly. In *Meta.* E 1025b 34–1026a 1 Aristotle says: 'Every naturally existing thing is called what it is in the same way as the snub' (trans. Kirwan).⁶ In *Meta.* H 1043a 29–33 he says it may be unclear whether the same goes for artefacts:

It is sometimes unclear whether a word signifies the composite substance or the actuality and the form. For instance is 'house' a word for the combination, a shelter composed of tiles and stones arranged in a certain way, or for the actuality and form, a shelter?⁷

But his own opinion can hardly be in dispute. A correct account will include both form and matter (*De An.* I, 403b 1–9; *Phys.* II, 200b 5–8, with which compare 1044 a 27–9: a saw is an instrument for dividing in a certain way, *sc.* by friction, composed of iron).

Aristotle seems to be right about words for sorts of living thing. A man is a thing which perceives, thinks, moves appetitively, etc., composed of flesh and bone in a certain arrangement, or of certain organs such as eyes and legs. The notion of a human body is the notion of the matter of a man, and the notion of a conscious purposive agent (which is, in fact, some people's notion of a human soul) is the notion of the form. But how, we may ask, are the matter and the form of a thing related? I have used the words 'compose' and 'constitute'. It might be thought that these words stand in no need of explanation. Aristotle, however, has no word which will do quite the same job – he has to rely on verbs of being and becoming and a preposition, ἐκ, which also signifies place whence – and he seems to feel that what is wanted is not a word but an account, since he offers us two.

In *Phys.* I, 7 he observes that if *A* is to become *f*, it must admit of at least two descriptions. One will be negative, of the form 'thing which is not *f*'. The other will not. Thus if *A* is to become pale it must be a thing which is not already pale, and it must satisfy some sortal description, like 'man'. Now Aristotle

suggests, the matter-description of an *s* is a non-negative description of that which comes to satisfy the form-description of an *s*. 'House', 'shelter' and 'bricks' are interrelated as are 'pale man', 'pale' and 'man'.

This account, which identifies the matter-notion of an *s* with the positive notion of that which becomes or turns into an *s*, has an obvious defect. It will not work for living things – or anything else which comes into existence through chemical change. That of which men are composed is different from that out of which men are produced: they are composed of arms and legs, produced from ova and spermatozoa.

Even in *Phys.* I (191b 27–9) Aristotle tells us that an alternative account can be given in terms of what he calls *dunamis* and *energeia* or *entelecheia*. I say '*energeia* or *entelecheia*' because in all relevant contexts he uses these words interchangeably.⁸ In *De An.* II, 1, as soon as he brings in the words 'form' and 'matter' he explains them in this way, and they are regularly explained in this way in *Meta.* H 1042a 27–8, b 9–11, 1043a 5–28, and above all 1045a 23–b 23. *Dunamis* and *entelecheia* are not mere variants for 'matter' and 'form'; nor can we, in explaining their meaning, assume that we already know the difference between matter and form, since Aristotle uses them precisely to explain that difference.

Before considering how he does that, we should note that Aristotle's form-expressions are not a wholly homogeneous collection. They include shape-expressions like 'sphere' and 'concave', expressions for ratios like 'two to one' (*Phys.* II, 194b 28), words expressing the use of things like 'shelter', and psychological terms like 'thing which perceives'. It is not immediately obvious that all form-concepts will be related to matter-concepts in the same way. Aristotle himself distinguishes two kinds of forms. There are 'mathematical' forms (*Phys.* II, 194a 1) such as a sphere, the ratio of two to one, which can be defined without reference to change (194a 5) and which can be found in different materials (*Meta.* Z 1036a 31–2), and there are forms of natural things, and of artefacts like a saw, which cannot (*Phys.* II, 194a 5–7, 200b 5–7; *Meta.* Z 1036b 21–32). Important as Aristotle considers this distinction to be, he does not seem to think that the relation of a sphere to bronze might be different from that of a perceiver to an organic body. In fact, the *Physics* I account works best for forms of the first sort, and

the account in terms of *dunamis* and *entelecheia* works best for forms of the second.

What does Aristotle mean by *dunamis* and *entelecheia*? As soon as he has said that matter is *dunamis* and form *entelecheia* (412a 9–10), he points out that *entelecheia* is used in two senses: ‘Things are called this in two ways: knowledge is called ‘entelecheia’ in one way, and contemplation in another.’⁹ Hamlyn (*Aristotle: ‘De Anima’*, p. 82) takes Aristotle to mean that form can be *entelecheia* in both senses. This is not, however, Aristotelian doctrine, and that Aristotle’s point is a general one about the meaning of *entelecheia* appears from his restatement of it in 412a 22–3. This being so, we can answer our second question, which concerned the use of ‘first’ in the definition of soul. A soul is an *entelecheia* in the first sense of the two just distinguished. The definition is not, in fact, well translated by Hamlyn. It should read not ‘the soul is the first actuality’, but ‘the soul is the actuality in the first way’. A philosopher of language might observe that things are called sentences in two ways, as ‘Socrates is wise’ is, and as what Socrates’ judges pronounced on him is. It would be highly unnatural to go on to say that ordinary speakers utter first sentences and only properly appointed officials can pronounce second sentences.

Hamlyn is following in a tradition which ascribes to Aristotle the doctrine that actuality has two grades, called ‘first actuality’ and ‘second actuality’. The only evidence for this obscure doctrine in the Aristotelian corpus is the use of ‘first’ with *entelecheia* in *De An.* II, 412a 27 and 412b 5, the use we are now discussing. On the other hand, a distinction between two senses of *dunamis* and *entelecheia* is elaborated in *Meta.* Θ. The discussion there begins:

Let us determine about *dunamis* and *entelecheia*, and first about what is called ‘*dunamis*’ most correctly but not most usefully for our present purpose. For ‘*dunamis*’ and ‘*energeia*’ extend beyond the things which are so called only in respect of change. But having spoken of *dunamis* in this connection, in determining about *energeia* we will clarify the other kinds.

(1045b 34–1046a 4; cf. 1048a 28–30)¹⁰

It is plain that the first sense distinguished here is the second sense distinguished in the *De Anima*. *Dunamis* and *energeia*, in

connection with change, mean 'power' and 'exercise' or 'potentiality' and 'actualization', and contemplation is an *entelecheia* in the sense that it is an exercise of power. But given that the sense in which form is *entelecheia* is different from this, what is it? The discussion in *Meta. Θ* fails to make this clear.

The senses of *dunamis* and *energeia* which Aristotle wants to explain in *Θ*, the 'most useful' ones, are those in which a thing can be said to *exist* in *dunamis* or *energeia*. Classifying in *Meta. Δ 7* the ways in which things can be said to exist, Aristotle observes:

Again, 'to be' and 'thing which is' signify the things mentioned both said in *dunamis* and said in *entelecheia*. For we say both that that which sees in *dunamis* and that that which sees in *entelecheia* is a thing which sees. . . . And similarly with substances. We say that the Hermes in the stone *is*, and the half of the line, and corn when it is not yet full-grown.

(1017a 35–b 8)¹¹

These ways in which things can be said to be are recalled in *Meta. E 1026b 1–2*, and it is these that *Meta. Θ* promises to clarify (1045b 32–5). We even have roughly the same examples:

We call 'in *dunamis*', e.g., the Hermes in the wood and the half in the whole, in that they might be got out.

(1048a 32–3)¹²

But instead of explaining this use, Aristotle contents himself with saying that it is (perhaps in some loose way) analogous to the use in connection with change:

Things are called 'in *energeia*' not all in the same way, but rather by analogy: as this is in this or to this, so that is in that or to that. For some are as change to *dunamis*, others as substance to certain matter.

(1048b 6–9)¹³

We do not wish to be told that Aristotle uses *dunamis* and *energeia* 'widely': we can see that for ourselves. We want to know why he uses them for the relationship of 'substance to certain matter'.

A common view, well expressed by J. L. Ackrill in 'Aristotle's definitions of *psuchē*' (*Proceedings of the Aristotelian Society*

(1972–3), is this. A matter-description of an *s* is one which will apply to what is potentially but not actually an *s*; a form-description is a description of what has to be added to the matter of an *s* if we are to have an actual *s*. There are many reasons why this cannot be accepted as Aristotle's meaning. First, *dunamis* will be used in the same way as in connection with change. Second, this account is hardly different from the one offered in *Phys.* I, 7, and involves (as Ackrill points out) the same difficulties. Next, the interpretation does not fit Aristotle's actual use of *dunamis*. He says, for instance, in 412a 9, that matter 'is *dunamis*'. That which is potentially *f* may be said to have potentialities but not to *be* one. A similar problem will arise about *entelecheia*. If Aristotle calls the soul of a man an *entelecheia* on the ground that it is what has to be added to an organic body if we are to have an actual man, we should expect him to call it the *entelecheia*, the actuality, of a man. But in fact he calls it the *entelecheia* of an organic body. Finally, and most serious, this interpretation is irreconcilable with *Meta.* H 6, the chief passage in which Aristotle tries to explain the matter/form relationship in terms of *dunamis* and *entelecheia*.

Aristotle starts the chapter by raising a difficulty about definitions in terms of genus and differentia, like 'A man is a two-footed animal': how is what is signified by the genus-expression related to what is signified by the differentia-expression? He then claims (perhaps mistakenly) that the same problem arises about form – and matter – expressions like 'round' or 'sphere' and 'bronze' (1045a 25–6). He continues:

It is because of this problem that some people talk of participation, and get into some difficulties about what the cause is of participation and what it is to participate. And some talk about compresence, like Lycophron, who says that knowledge is the compresence of knowing and the soul. And some say that living is the composition or binding together of body and soul. In fact the same account holds in all cases. Being healthy will be the compresence or binding together or composition of soul and health, and the bronze's being a triangle a composition of bronze and triangle, and being white a composition of surface and whiteness. The explanation is that they are looking for an account of *dunamis* and *entelecheia* which

will both differentiate them and make them one. But as has been said, the last matter and the form are one and the same, the one in *dunamis* and the other in *energeia*, so it is like looking for an explanation of why what is one is also one. For each thing is one, and the in *dunamis* and the in *energeia* are one in a way, so there is no other explanation unless something is responsible as having effected the change from *dunamis* to *energeia*.

(1045b 7–22)¹⁴

Obscure as this may be in some ways, certain points are clear. Aristotle is rejecting any account of the matter/form relationship according to which form is somehow combined with matter. What we need is an account which both shows matter and form to be identical and differentiates them. Such an account must be couched in terms of *dunamis* and *energeia*. These points suffice to dispose of the interpretation we have been considering. For on that interpretation Aristotle uses the notion of addition, which is a kind of combination; and if, as advocates of that interpretation suppose (Ackrill, 'Aristotle's definitions of *psuchē*', p. 122), what has to be added to a human body is certain powers, how can these be shown to be identical with the body?

Aristotle's readers get into difficulties because, despite his warning that *dunamis* is used in many ways, they think it must always mean 'potentiality'. There are passages in which it is much easier to translate it 'possibility'. In *Meta.* M 1087a 10–25 Aristotle considers a problem which was later to be raised by Zeller: if all knowledge is of universals, and all that exists is particular, knowledge and reality will fall hopelessly apart. He replies:

The statement that all knowledge is universal . . . is in a way true, in a way not. For knowledge, like knowing, is twofold, that which is in *dunamis* and that which is in *energeia*. The *dunamis* as matter being universal and indefinite is of the universal and indefinite. The *energeia* is definite and of the definite, being this individual of this individual.¹⁵

The same doctrine is stated in *De An.* III, 431b 24–6:

Knowledge and perception divide along with things, the in *dunamis* corresponding to the in *dunamis* and the in *entelecheia* to the in *entelecheia*.¹⁶

The distinction on the side of knowledge is clear: it is the distinction between dispositional knowledge and its exercise. We have dispositional knowledge of universals, exercise it in judging that particulars instantiate (or do not instantiate) these universals. The literate man who knows the type-letter *a* judges that this mark is a token of it (1087a 20–1; cf. *A. Pst.* II, 100a 16–b 1). But in what way are universals and particulars in *dunamis* and in *energeia*? It can hardly be supposed that the type-letter *a* is in potentiality anything, or that it is itself any kind of potentiality. It is quite natural, however, to say that it is a possibility of which token-letters are fulfilments. Tokens of the same type are fulfilments of the same possibility, and differ in that they are different fulfilments of it.

Similarly when Aristotle says that some things exist in *dunamis*, it is more charitable to translate *dunamis* as ‘possibility’ than as ‘potentiality’. For while it makes sense to say that what is cold is in potentiality hot (Aristotle has this use: *Phys.* VIII, 255b 6), it does not make sense to say that anything is in potentiality an existent. What is potentially *f* must be actually *g*. On the other hand, we might well wish to contrast the kind of existence which attaches to possibilities or things which are possible with the kind of existence which attaches to actual things or to fulfilments of possibilities. Things of which there are or can be instances exist as fulfilled or unfulfilled possibilities, not as actualities over and above their fulfilments.

It might, I think, be argued that Aristotle has rather possibility than potentiality in mind in several other discussions in which he uses *dunamis* and *energeia*, but our concern is with his explanation of the matter/form relationship. This, I suggest, is that matter-concepts are concepts of possibilities, and form-concepts are concepts of things as fulfilments of possibilities. Matter is *dunamis* in the sense of possibility. The form of a man is the *entelecheia* of the body in that thinking of Socrates as a conscious, purposive agent is thinking of him as a conscious, purposive instance of whatever structure he exhibits. The matter-expression ‘flesh and bones (or ‘arms and eyes’) arranged thus’ expresses our idea of the possibilities of which Socrates is a fulfilment, and the form-expressions ‘thing which perceives’ etc. express our idea of Socrates as a fulfilment of these possibilities. Form and matter are one in that a fulfilment of a possibility is not something over and above that of which it is a fulfilment.

At first this suggestion may seem very far-fetched. Does not Aristotle regularly equate *form* with what is universal and *matter* with what is particular? I should reply that the position is not so clear. There are plenty of passages, including the explanation of the notions of form and matter in *De An.* II, 1, where form is spoken of as particular and matter as not in itself particular. I have argued elsewhere that Aristotle makes form, not matter, the principle of individuation.

A better objection is that, Aristotle's general position apart, if he wants to explain the matter/form relationship in terms of instances and things instantiated, it would be easier to do this the other way round. It is more natural to say that a bronze triangle is a brazen instance of a triangle, than that it is a triangular instance of bronze. That is true. As I said earlier, it is not clear that all Aristotle's form-expressions have meaning in the same way. Expressions like 'triangle' do indeed seem to signify universals. When, however, we try to define a sort of artefact or living thing, physical structure comes into our account of the matter. The matter of a house is stones and tiles *arranged thus* (*Meta.* H 1043a 32). The matter of a man is not just any body (414a 22–4), but one with certain parts. The explanation of the matter/form relationship in terms of *dunamis* and *entelecheia* is plausible, I wish to claim, only for forms expressed by phrases like 'cutting instrument' and 'thing which perceives'.

But, and this is the most serious objection, is it plausible even there? Aristotle does, in a number of places (e.g. *Phys.* III, 200b 26–7, 206a 18–21; *De Gen.* I, 327b 22–6) suggest that some things exist in *energeia* only, some in *dunamis* only, and some in both. This would be consistent with a doctrine to the effect that some expressions signify things which can be conceived in two ways, and others already express one or the other of these modes of conception. But no general doctrine of possibility- and actuality-concepts is worked out, and if one were, could it shed any light on the difference between matter- and form-concepts? Is not an axe just as much an instance of a chopping instrument as of a structure of wood and iron? Is not Socrates as much an instance of a conscious, purposive agent as he is of an organic body?

The issue turns on the concepts of perception and appetitive movement. If these are not concepts of possibilities, but rather of fulfilments of possibilities, then the notion of a thing which perceives and pursues or avoids will not be the notion of a

possibility or a thing of which there are instances. In point of fact perceiving and purposive acting involve both physical and psychological elements. But if our notions of these elements are respectively notions of possibilities and fulfilments, there will be a case for saying that the notions of an organic body and a perceiving, purposive agent are similarly related. Now Aristotle is not as explicit as we could wish on the relationship of physical and psychological elements in action and perception. He is impeded, I shall suggest, by an inadequate analysis of the concept of change. But I think he says enough to justify, or at least render intelligible, an account of the form/matter relationship in the case of men – and, incidentally, artefacts – such as I am attributing to him.

Plato claims in *Republic* V 479a–b (see also *Cratylus* 439c–e and, for the same point about aesthetic terms, *Hippias Major* 289e–291c; cf. Xenophon, *Memorabilia* III, viii) that where *f* is a moral term like ‘honest’, anything which is *f* will sometimes be the opposite of *f*. He seems to mean that whatever action-description we frame in more or less physical terms (e.g. ‘returning a pledge’, ‘handing over two drachmae’), actions satisfying that description will in some circumstances be honest, in others dishonest, in some intelligent, in others foolish, and so on. Aristotle elaborates this view. Giving money is generous, lying with your neighbour’s wife is lecherous, only if these actions are performed in a certain way, and not just consciously but for certain ends: *EN* II, 1109a 27–9, V, 1130a 24–8, cf. 1137a 6–9. Plato and Aristotle evidently think that a description of an action in physical terms cannot entail a description of it in moral terms. But why not? They are making use of a distinction between, on the one hand, things done, changes effected or actions performed and, on the other, doings of things, effectings of changes, performings of actions. One effecting of a change will be honest or brave and another effecting of the same change will be dishonest or cowardly. Plato does not seem conscious that he is employing this distinction. He is absorbed by the idea that moral terms have a primary application to certain entities separate from particular doings but relating to them pretty much as are the deeds done. An honest handing-over of money would be an instance not only of the deed of handing over money, but also of what is honest. Aristotle rejects these additional entities. Instead of

appealing to them he distinguishes between what he calls *poiēsis* and *praxis* (e.g. *EN* VI, 1140a 2). This is the distinction between effecting something, and effecting it in a certain way (*EN* V, 1137a 22–5). Moral terms apply to *praxeis*. It is tempting to translate *praxis* 'behaviour' or 'piece of behaviour', but it is the noun corresponding to a verb meaning 'to act' or 'to do', and the distinction between *poiēsis* and *praxis* is best expressed as follows: a notion of *poiēsis* is a notion of what a man does, and a notion of *praxis* is a notion of a man's doing of what he does.

The relationship between what may be done many times and particular doings of this is a possibility-fulfilment one. Aristotle does not explain it in terms of *dunamis* and *energeia*. But he does say that such *poiēseis* as building a house are *kinēseis*, whereas a *praxis* is an *energeia*. The relationship between the *kinēsis/energeia* and the *dunamis/energeia* distinctions will be discussed below.

In discussing perception Aristotle gives a good deal of space to physiological processes: the acquisition by sense-organs of perceptible qualities without matter, the consequent changes in the region near the heart and so forth. He also says that smelling, besides being affected, involves being conscious – presumably of the object of smell (424b 16–17); that when we see or hear we are aware that we do so (*De An.* III, 425b 12; cf. *Phys.* VI, 244b 15–245a 2, 245a 18–20; *Sens.* 437a 27–8, 448a 24–30; *EN* IX, 1170a 29–32), and differentiate properties which are proper to different senses. How are the physiological processes related to these mental activities? How is coloration of the eye-jelly related to being conscious of a coloured object? It is not enough to say that perception occurs *through* the body (*Sens.* 436b 6–7). Does this mean that our consciousness of an object is caused by its action on our eye-jelly, or what?

In *De An.* I Aristotle says that the scientist and the philosopher give different accounts of emotions like anger:

The one says it is appetite for vengeance, or something like that [Aristotle's own formulation is given in *Rhet.* II, 1378a 31–3]; the other that it is boiling of blood and hot stuff around the heart. Of these, the one gives the matter, the other the form.

(403a 30–b 1)¹⁷

It is natural to suppose that 'the eye's becoming red' and

'consciousness of a red thing' would similarly be reckoned accounts of the matter and the form of a piece of perceiving. But the notions of matter and form need explanation. Is consciousness something added to a physiological process? It is better to say that the process *constitutes* consciousness. But it can occur without consciousness. A garment is not conscious when it is dyed, or a cinema-screen (perhaps a better model) when a coloured slide is projected on to it. Aristotle needs a distinction analogous to the distinction between doing and what is done. Just as giving money is not in itself generous, but doing it in a certain way is, so having one's eye-jelly coloured by something is not in itself being conscious of that thing, but the going-on of this process in certain circumstances is.

In what circumstances? For our present purposes we need not answer that question; it is enough to show that Aristotle has the materials for an answer. Aristotle appears to think it logically necessary that whatever perceives should pursue and avoid, or at least desire to do so (*De An.* 414b 3–6, 421a 15, 431a 8–17; *Sens.* 436b 13, 437a 3; *Som.* 454b 29–31).

Perceiving is like merely saying and thinking; but when something is perceived as pleasant or distressing, comparably to asserting or denying we pursue or avoid. To be pleased or distressed is to be active with the perceptual mean [whatever that may be] in relation to the good or bad as such. And avoidance and appetition are the same [sc. as this] – I mean actual avoiding and reaching out –; and that which is appetitive and that which avoids are not different either from one another or from that which perceives, though they differ in account. To the soul which thinks, appearances stand like perceptions, and when we say or deny good or bad, we avoid or pursue. That is why the soul never thinks without an appearance.

(431a 8–17)¹⁸

Hamlyn finds this doctrine unsatisfactory (*Aristotle: 'De Anima'*, p. 90). His own conception of consciousness is such that a thing could perfectly well perceive or believe things without being capable of any movements of pursuit or avoidance, and hence without its beliefs ever being reflected in action. This being so, it is not surprising that he says Aristotle has no concept of consciousness (pp. xiii, 122, etc.). The passages just mentioned

suggest that actually to perceive or think that p is to pursue or avoid for the reason that p . If Aristotle thinks that, or something like it, he can easily say in what circumstances having your eye-jelly coloured by, say, Diares' son is being conscious of Diares' son. If you cross the street for the reason that Diares' son is on the other side or, like the opportunist of *Phys.* II, 5, for the purpose of recovering a debt from him, then you see him.

Does Aristotle recognize that to give an account of perception he needs a distinction between processes of change and particular occurrences of processes? At least he uses the word *kinēsis* for the bodily processes involved in perceiving and having things appear to us (428b 10–11 etc.), but says that seeing, thinking and experiencing pleasure are not *kinēseis* but *energeiai* (*Meta.* Θ 1048b 23–8; cf. *EN* X 1174a 14–15).

In 'Aristotle's distinction between *energeia* and *kinesis*' (*New Essays on Plato and Aristotle*, ed. R. Bamborough), Ackrill argues persuasively: 'While Aristotle's *descriptions* of his *energeia*–*kinesis* distinction seem to add up to a useful distinction, his treatment of examples is not in accordance with that distinction' (p. 134). As Ackrill and others observe, Aristotle's criteria for distinguishing between *kinēseis* and *energeiai* seem to be criteria for distinguishing between what Z. Vendler (in 'Verbs and tenses', *Philosophical Review* (1957)) calls 'accomplishments' and 'activities'. Vendler counts as accomplishments running a mile and drawing a circle, and as activities running (*sc.* for a stretch of time) and pushing a cart. It is fairly clear that Vendler's distinction is a possibility-fulfilment one between processes which go on and actual goings-on of processes. A period of running is a taking-place of a process of running a certain distance; a going-on of the process of drawing a circle might be pushing a pencil. Hence Aristotle's criteria are criteria for distinguishing processes and goings-on of processes. But whereas his examples of *energeiai* are indeed goings-on of processes, his examples of *kinēseis* – building a house, slimming, walking and so on – are things which can be considered or expressed either as processes ('He built a house quite quickly, in six weeks') or as goings-on of processes ('He was building a house for six weeks'). To put the point in the formal mode, Aristotle's *energeia*-descriptions are fulfilment-descriptions, but his *kinēsis*-descriptions are like substance-expressions for 'composites': they signify things which can be considered either as processes or as goings-on of processes.

Why this muddle? And since Aristotle is not shy of saying that things are ‘spoken of in two ways, as in *dunamis* and *energeia*’, why does he not say this of change? The answer is simple. In *Phys.* III, 1–3, though uneasily conscious that change cannot be classed either as a *dunamis* or as an *energeia* (201b 28–9), he commits himself to a definition of it as ‘an *energeia* of a sort’ (202a 1). If the notion of a change is already the notion of an *energeia* of a sort, we cannot say that the *dunamis/energeia* distinction applies to change. That it does, however, seems to be a vital assumption both of Aristotle’s ethics and of his psychology.

Aristotle describes, then, the physical and psychological elements in thought and action respectively as *kinēsis* and *energeia*; and he conceives, though he does not describe, the *kinēsis/energeia* distinction as a possibility-fulfilment one. This alone might render intelligible the claim that matter and form are related as *dunamis* to *entelecheia*. Aristotle might stipulate that if ϕ ing stands to ψ ing as *kinēsis* to *energeia*, then that which ϕ s stands to that which ψ s as *dunamis* to *entelecheia*. He might say that a matter-concept of an *s* is a concept of an *s* as a thing which ϕ s and a form-concept is a concept of an *s* as a thing which ψ s. This account could be applied not only to animals but also to artefacts. A rapier is a thing used to transfix people, composed of steel in a certain shape. It is as a formation of steel that a rapier is pushed forward for a couple of feet through a human body. But although you transfix your enemy by pushing your rapier forward, the notion of *using* of a rapier is not the notion of a two-foot movement. It is the notion of a causing of a movement for a purpose. A two-foot movement is a *kinēsis*; a pushing of something for a purpose, a purposive acting on something, is an *energeia*. Compare *De Gen. An.* II, 734b 28–735a 2:

We would not say that an axe or other instrument was made by fire alone. . . . Heat and cold make the iron hard and soft, but the sword is made by the instruments’ movement, which contains a definition belonging to art.¹⁹

(tr. Balme)

A certain structure of iron is what results from a certain physical process; a sword, i.e. a thing with a certain use, is produced by causal action which is an exercise of skill.

But although these considerations alone might explain Aristotle’s use of *dunamis* and *entelecheia* in connection with matter

and form, I think we can go further. That which perceives and moves purposively must have a certain structure: it must have, say, sense-organs and joints. But since perceiving and moving purposively are not special processes for which this structure is required but special goings-on of such processes, and since such processes logically could, and in fact do, go on without consciousness or purpose, the notion of a thing which perceives and acts purposively is not the notion of a particular structure, but rather the notion of a particular instance of a structure. A body which can be altered by coloured or sounding things is a special kind of body, but a body the being altered of which is consciousness is not. Hence Socrates is not, after all, an instance of a conscious, purposive, organic body, but a conscious, purposive instance of an organic body.

I conclude, then, that Aristotle's definition of soul as the actuality of an organic body should be interpreted as the claim that whereas physical notions generally are notions of possibilities, psychological notions are notions of fulfilments of possibilities. Our idea of Socrates' body is an idea of what he is an instance of, and our idea of him as a thing with thoughts and desires is an idea of him as an instance of this. This claim seems to be defensible and deserving of further investigation; but Aristotle's presentation of it is defective in various ways. First, though he tells us at the beginning of the *De Anima* (402a 25–b 1) that it 'makes no small difference' whether the notion of the soul is the notion of an *entelecheia* or of a 'thing which is in *dunamis*', he nowhere tells us quite what the difference is. Still less does he offer a general epistemology of actuality-concepts. Hence we are left wondering how it is possible to have ideas of things as fulfilments of possibilities, distinct from our ideas of the possibilities fulfilled. Second, he thinks his explanation of the matter/form relationship in terms of *dunamis* and *entelecheia* will apply not only to forms of artefacts and living things, but also to 'mathematical' forms like shapes and ratios; and that seems to be incorrect. Finally, because he defines change generally as a kind of *energeia*, he is unable to explain the relationship of physical and psychological factors in perception and action in terms of *dunamis* and *entelecheia*, although such an explanation seems needed to justify calling the human soul an *entelecheia*. In view of these defects, it would not be surprising if Aristotle's definition of soul has seldom been properly understood.

NOTES AND REFERENCES

- 1 εἰ δὴ τι κοινὸν ἐπὶ πάσης ψυχῆς δεῖ λέγειν, εἴη ἂν ἐντελέχεια ἢ πρώτη σώματος φυσικοῦ ὀργανικοῦ.
- 2 δῆλον οὖν ὅτι τὸν αὐτὸν τρόπον εἰς ἄν εἴη λόγος ψυχῆς τε καὶ σχήματος· οὔτε γὰρ ἐκεῖ σχῆμα παρὰ τὸ τρίγωνον ἔστι καὶ τὰ ἐφεξῆς, οὔτ' ἐνταῦθα ψυχὴ παρὰ τὰς εἰρημένας διὸ γελοῖον ζητεῖν τὸν κοινὸν λόγον καὶ ἐπὶ τούτων καὶ ἐφ' ἑτέρων, ὅς οὐδενὸς ἔσται τῶν ὄντων ἴδιος λόγος.
- 3 And *to threptikon* 'thing which feeds itself'. But in assigning biological functions generally to soul Aristotle really is proposing a reform (*Phys.* II, 198b 12, 199b 35–200a 5). He is well aware that the soul is defined primarily by perception or thought and appetitive movement: *De An.* I, 403b 25–7, III, 427a 17–19.
- 4 So in *De An.* I, II, 1–2, III, 9–11 (except 432a 16), 434a 16; *De Sensu* 438b 9; *De Memoria*, *De Somno*, *De Insomniis*. In these places we can nearly always understand μόριον. In *De An.* II, 5–III, 8, 434a 16; *Sens.* 449a 11, a 17–18, it is easiest to translate τὸ φ-ικόν simply 'that which φs', though in 422b 15 and 423b 23 we understand αἰσθητήριον. In 432a 16 (τὸ κριτικόν = κρίνειν) and 434a 11 (τὸ βουλευτικόν = βουλή) the uses are exceptional. In 414a 31–2 Aristotle says δυνάμεις δ' εἵπομεν θρεπτικόν, αἰσθητικόν, ὀρεκτικόν, κινητικόν κατὰ τόπον, διανοητικόν, and it is easiest to take τὸ φ-ικόν in the two chapters which follow, *De An.* II, 3–4, as equivalent to ἡ φ-ικὴ δύναμις. This usage may have encouraged some readers (e.g. R. Sorabji, 'Body and soul in Aristotle', Chapter V above) to say that Aristotle thinks of the soul not as that which perceives, thinks, etc., but as a set of capacities, the capacity to perceive, the capacity to think, etc. I doubt if Aristotle would see any advantage to the philosophy of mind in distinguishing the concept of a perceiver from the concept of the capacity to perceive. It is Alexander (*De An.* 24.22–3), not he, who says the soul is ἡ ἐπὶ τῇ τοιαύτῃ κράσει δύναμις γεννωμένη. Aristotle invariably calls these capacities 'capacities of the soul', not 'of the body' (414a 29, 416a 19, 433a 31, etc.; cf. 402a 9, 408a 4, 409b 15–17). The analogy 'soul : body :: sight : the organ' (413a 1–2) is balanced by 'health : body :: knowledge : soul' (414a 4–10).
- 5 ἀναγκαῖον ἄρα τὴν ψυχὴν οὐσίαν εἶναι ὡς εἶδος σώματος φυσικοῦ δυνάμει ζῶν ἔχοντος.
- 6 πάντα τὰ φυσικὰ ὁμοίως τῷ σιμῷ λέγονται.
- 7 ἐνίοτε λανθάνει πότερον σημαίνει τὸ ὄνομα τὴν σύνθετον οὐσίαν ἢ τὴν ἐνέργειαν καὶ τὴν μορφήν, οἷον ἡ οἰκία πότερον σημείον τοῦ κοινοῦ ὅτι σκέπασμα ἐκ πλίνθων καὶ λίθων ὡδὶ κειμένων, ἢ τῆς ἐνεργείας καὶ τοῦ εἶδους ὅτι σκέπασμα.
- 8 'Entelecheia' predominates in *De An.* II, 1–2, but 'energeia' is used in 414a 9–12, and soul is *energeia* in *Meta.* H 1043a 35. 'Entelecheia' is used in *Meta.* Δ 1017b 1–9, 'energeia' in the parallel *Meta.* E 1026b 2, Θ 1048a 25–b 17. The terms are interchanged in *Meta.*

ARISTOTLE'S DEFINITION OF SOUL

H 1045b 17–23, Θ 1045b 35–1046a 2. *Energeia* is used in *Meta.* M 1087a 15–18, *entelecheia* in the parallel *De An.* III, 431b 25–6. There is also frequent interchange in *Phys.* III, 1–3.

- 9 καὶ τοῦτο διχῶς, τὸ μὲν ὡς ἐπιστήμη, τὸ δ' ὡς τὸ θεωρεῖν.
- 10 διορίσωμεν καὶ περὶ δυνάμεως καὶ ἐντελεχείας, καὶ πρῶτον περὶ δυνάμεως ἢ λέγεται μὲν μάλιστα κυρίως, οὐ μὴν χρησιμωτάτη γέ ἐστι πρὸς ὃ βουλόμεθα νῦν· ἐπὶ πλεον γὰρ ἐστὶν ἡ δύναμις καὶ ἡ ἐνέργεια τῶν μόνον λεγομένων κατὰ κίνησιν. ἀλλ' εἰπόντες περὶ ταύτης, ἐν τοῖς περὶ τῆς ἐνεργείας διορισμοῖς δηλώσομεν καὶ περὶ τῶν ἄλλων.
- 11 ἔτι τὸ εἶναι σημαίνει καὶ τὸ ὄν τὸ μὲν δυνάμει [ῥητὸν], τὸ δ' ἐντελεχείᾳ τῶν εἰρημένων τούτων· ὁρῶν τε γὰρ εἶναί φαμεν καὶ τὸ μὲν δυνάμει [ῥητῶς] ὁρῶν καὶ τὸ ἐντελεχείᾳ . . . ὁμοίως δὲ καὶ ἐπὶ τῶν οὐσιῶν· καὶ γὰρ Ἑρμῆν ἐν τῷ λίθῳ φαμέν εἶναι, καὶ τὸ ἥμισυ τῆς γραμμῆς, καὶ σίτον τὸν μήπω ἄδρον.
- 12 λέγομεν δὲ δυνάμει οἶον ἐν τῷ ξύλῳ Ἑρμῆν καὶ ἐν τῇ ὅλῃ τὴν ἡμίσειαν, ὅτι ἀφαιρεθείη ἄν.
- 13 λέγεται δὲ ἐνέργειᾳ οὐ πάντα ὁμοίως ἀλλ' ἢ τῷ ἀνάλογον, ὡς τοῦτο ἐν τούτῳ ἢ πρὸς τοῦτο, τόδ' ἐν τῷδε ἢ πρὸς τόδε, τὰ μὲν γὰρ ὡς κίνησις πρὸς δύναμιν τὰ δ' ὡς οὐσία πρὸς τινα ὕλην.
- 14 διὰ ταύτην δὲ τὴν ἀπορίαν οἱ μὲν μέθεξιν λέγουσι, καὶ αἴτιον τί τῆς μεθέξεως καὶ τί τὸ μετέχειν ἀποροῦσιν· οἱ δὲ συνουσίαν [ψυχῆς], ὡσπερ Λυκόφρων φησὶν εἶναι τὴν ἐπιστήμην τοῦ ἐπίστασθαι καὶ ψυχῆς· οἱ δὲ σύνθεσιν ἢ σύνδεσμον ψυχῆς σώματι τὸ ζῆν. καίτοι ὁ αὐτὸς λόγος ἐπὶ πάντων· καὶ γὰρ τὸ ὑγιαίνειν ἔσται ἢ συνουσία ἢ σύνδεσμος ἢ σύνθεσις ψυχῆς καὶ ὑγείας, καὶ τὸ τὸν χαλκὸν εἶναι τρίγωνον σύνθεσις χαλκοῦ καὶ τριγώνου, καὶ τὸ λευκὸν εἶναι σύνθεσις ἐπιφανείας καὶ λευκότητος. αἴτιον δ' ὅτι δυνάμεως καὶ ἐντελεχείας ζητοῦσι λόγον ἐνοποιὸν καὶ διαφοράν. ἔστι δ', ὡσπερ εἴρηται, ἡ ἐσχάτη ὕλη καὶ ἡ μορφή ταῦτο καὶ ἔν, <τὸ μὲν> δυνάμει τὸ δὲ ἐνέργειᾳ, ὥστε ὁμοιον τὸ ζητεῖν τοῦ ἐνὸς τί αἴτιον καὶ τοῦ ἐν εἶναι· ἐν γὰρ τι ἕκαστον, καὶ τὸ δυνάμει καὶ τὸ ἐνέργειᾳ ἐν πῶς ἐστὶν, ὥστε αἴτιον οὐθέν ἄλλο πλὴν εἴ τι ὡς κινήσαν ἐκ δυνάμεως εἰς ἐνέργειαν.
- 15 τὸ δὲ τὴν ἐπιστήμην εἶναι καθόλου πάσαν, ὥστε ἀναγκαῖον εἶναι καὶ τὰς ὄντων ἀρχὰς καθόλου εἶναι καὶ μὴ οὐσίας κεχωρισμένας, ἔχει μὲν μάλιστα ἀπορίαν τῶν λεχθέντων, οὐ μὴν ἀλλὰ ἔστι μὲν ὡς ἀληθὲς τὸ λεγόμενον, ἔστι δ' ὡς οὐκ ἀληθὲς. ἡ γὰρ ἐπιστήμη, ὡσπερ καὶ τὸ ἐπίστασθαι, διττόν, ὦν τὸ μὲν δυνάμει τὸ δὲ ἐνέργειᾳ. ἡ μὲν οὖν δύναμις ὡς ὕλη [τοῦ] καθόλου οὐσα καὶ ἀόριστος τοῦ καθόλου καὶ ἀορίστου ἐστίν, ἡ δ' ἐνέργεια ὠρισμένη καὶ ὠρισμένου, τόδε τι οὐσα τοῦδέ τινος.
- 16 τέμνεται οὖν ἡ ἐπιστήμη καὶ ἡ αἴσθησις εἰς τὰ πράγματα, ἡ μὲν δυνάμει εἰς τὰ δυνάμει, ἡ δ' ἐντελεχείᾳ εἰς τὰ ἐντελεχείᾳ.
- 17 ὁ μὲν γὰρ ὄρεξιν ἀντιλυπήσεως ἢ τι τοιοῦτον, ὁ δὲ ζέσιν τοῦ περὶ καρδίαν αἵματος καὶ θερμοῦ. τούτων δὲ ὁ μὲν τὴν ὕλην ἀποδίδωσιν, ὁ δὲ τὸ εἶδος καὶ τὸν λόγον.
- 18 τὸ μὲν οὖν αἰσθάνεσθαι ὁμοιον τῷ φάναι μόνον καὶ νοεῖν· ὅταν δὲ

WILLIAM CHARLTON

ἤδὺ ἢ λυπηρόν, οἷον καταφάσα ἢ ἀποφάσα διώκει ἢ φεύγει· καὶ ἔστι τὸ ἠδεσθαι καὶ λυπεῖσθαι τὸ ἐνεργεῖν τῇ αἰσθητικῇ μεσότητι πρὸς τὸ ἀγαθὸν ἢ κακὸν, ἢ τοιαῦτα. καὶ ἡ φυγὴ δὲ καὶ ἡ ὄρεξις ταῦτὸ, ἢ κατ' ἐνέργειαν, καὶ οὐχ ἕτερον τὸ ὀρεκτικὸν καὶ τὸ φευκτικὸν, οὔτ' ἀλλήλων οὔτε τοῦ αἰσθητικοῦ· ἀλλὰ τὸ εἶναι ἄλλο. τῇ δὲ διανοητικῇ ψυχῇ τὰ φαντάσματα οἷον αἰσθήματα ὑπάρχει. ὅταν δὲ ἀγαθὸν ἢ κακὸν φήσῃ ἢ ἀποφήσῃ, φεύγει ἢ διώκει· διὸ οὐδέποτε νοεῖ ἀνευ φαντάσματος ἢ ψυχῆ.

- 19 οὐδ' ἂν πέλεκυν οὐδ' ἄλλο ὄργανον φήσαιμεν ἂν ποιῆσαι τὸ πῦρ μόνον. . . σκληρὸν μὲν γὰρ καὶ μαλακὸν τὸν σίδηρον ποιεῖ τὸ θερμὸν καὶ τὸ ψυχρὸν, ἀλλὰ ξίφος ἢ κίνησις ἢ τῶν ὀργάνων ἔχουσα λόγον [τὸν] τῆς τέχνης.

APPENDIX: NOTE OF LATER RELEVANT
PUBLICATIONS

- The Analytic Ambition* (Oxford: Basil Blackwell, 1981), chapters 2 and 11
'Telling the difference between sweet and pale', *Apeiron* 15 (1981), 103–14
'Aristotle and the *harmonia* theory', in *Aristotle on Nature and Living Things*, ed. A. Gotthelf (Bristol: Bristol Classical Press, 1986), pp. 131–50
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INDEX

- abstraction 18, 60, 64, 65, 114, 121, 150, 152
- account 17, 18, 21, 22, 23, 24, 26, 47, 58, 66, 69, 152, 163, 198, 200, 204, 210
- Ackrill, J. L. 5, 8, 10, 11, 99, 108, 184, 195, 203, 204, 205, 211
- acted upon (being), affected 17, 19, 20, 30, 31, 32, 33, 34, 36, 47, 48, 52, 58, 60, 61, 63, 72, 75, 76, 77, 94, 95, 97, 99, 112, 113, 126, 129, 130, 132, 134, 138, 139, 142, 143, 144, 146, 147, 155, 167, 175, 182, 209
- action 27, 52, 58, 64, 67, 68, 70, 97, 101, 111, 123, 136, 166, 167, 169, 177, 178, 179, 180, 181, 184, 186, 194, 195, 208, 210, 212, 213
- activity 8, 25, 27, 30, 31, 35, 51, 52, 56, 58, 61, 62, 63, 76, 86, 87, 91, 95, 98, 104, 105, 125, 130, 135, 139, 141, 142, 143, 144, 145, 147, 148, 149, 156, 157, 158, 159, 165, 166, 168, 170, 183, 211
- actual, actually 4, 31, 32, 33, 35, 36, 37, 43, 47, 51, 59, 60, 61, 62, 63, 64, 65, 76, 77, 78, 84, 114, 120, 130, 131, 132, 133, 134, 135, 137, 138, 139, 140, 146, 148, 149, 155, 156, 203, 204, 205, 206
- actuality 5, 16, 21, 22, 23, 24, 25, 26, 28, 32, 33, 35, 36, 44, 46, 91, 98, 124, 126, 155, 163, 164, 197, 198, 200, 202, 204, 207, 213
- actualisation 5, 93, 98, 131, 145, 162, 166, 172, 191, 202
- actuality, 'first', in the first way 22, 26, 163, 164, 198, 202
- affections 15, 17, 18, 19, 20, 36, 65, 81, 82, 84, 121
- affirmation/denial 62, 63, 104, 118, 210
- Alexander 124, 158, 214
- Allan, D. J. 123
- alteration (qualitative change) 19, 29, 31, 32, 33, 63, 72, 83, 84, 91, 99, 105, 127, 166, 169, 174, 176
- Anaxagoras 58, 60, 111, 123, 188
- animals 15, 16, 18, 22, 23, 24, 25, 26, 27, 28, 29, 37, 38, 39, 40, 41, 42, 55, 58, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 85, 91, 94, 95, 99, 100, 101, 102, 103, 104, 105, 106, 112, 152, 164, 165, 178, 182, 183, 185, 189, 195, 212
- appearances 55, 56, 100, 210, 211
- Aquinas 9, 11, 152, 154, 196
- Aristotle's predecessors 6, 21, 25, 52, 55, 110–12, 116, 174
- Aristotle, works of: *Analytica*

INDEX

- Posteriora* 102, 125, 147, 206; *De Caelo* 189; *Categoriae* 190; *Ethica Eudemia* 161, 190; *Ethica Nicomachea* 104, 125, 136, 152, 166, 169, 173, 177, 178, 179, 185, 186, 189, 190, 192, 193, 194, 208, 209, 211; *De Generatione Animalium* 154, 187, 191, 192, 194, 195, 212; *De Generatione et Corruptione* 76, 126, 127, 138, 156, 175, 183, 194, 195, 207; *Historia Animalium* 191; *De Insomniis* 174, 189, 190, 192, 214; *De Memoria* 85, 99, 126, 156, 164, 169, 171, 174, 189, 190, 192, 214; *Metaphysica* 5, 12, 125, 126, 130, 147, 148, 151, 152, 156, 157, 159, 166, 168, 177, 178, 188, 189, 192, 193, 194, 195, 199, 200, 201, 202, 203, 204, 205, 211, 214, 215; *Meteorologica* 95, 195; *De Motu Animalium* 101, 102, 183, 189, 192, 194; *Parva Naturalia* 89, 120; *De Partibus Animalium* 189, 191, 195; *Physica* 83, 97, 99, 105, 126, 151, 155, 161, 166, 168, 169, 175, 180, 182, 183, 189, 192, 194, 195, 196, 199, 200, 201, 204, 206, 209, 211, 212, 214, 215; *Politica* 195; *Protrepticus* 152; *Rhetorica* 179, 190, 194, 209; *De Sensu* 85, 91–2, 95, 166, 169, 190, 191, 209, 214; *De Somno* 85, 169, 189, 191, 210, 214; *Topica* 99
- Armstrong, A. 160
 Armstrong D. M. 181, 194
 Averroes 156
 Avicenna 156, 196
 avoidance 63, 64, 66, 67, 71, 99, 104, 105, 122, 210, 211
 awareness 79, 135, 167, 168, 169, 176, 189, 191
- Balme, D. M. 212
 Barnes, J. 154, 160, 162, 165, 166, 167, 170, 172, 187–8, 191, 194
 Baumrin, J. M. 10, 108, 109
 Beare, J. I. 191
 becoming *x* 79, 81, 82, 83, 85, 86, 88, 200
 being, to be 4, 20, 22, 52, 63, 203
 belief 25, 55, 56, 57, 70, 100, 186, 210
 Blumenthal, H. J. and Robinson H. 187, 196
 bodily activities, processes 1, 86, 162, 168, 176, 211
 body 3, 5, 6, 7, 8, 17, 18, 19, 21, 22, 23, 25, 28, 30, 31, 35, 45, 46, 48, 59, 67, 71, 72, 73, 91, 94, 95, 97, 99, 113, 126, 128, 145, 154, 162, 166, 168, 174, 176, 181, 182, 183, 185, 197, 199, 200, 204, 205, 206, 207, 208, 213, 214
 body and soul *see* soul and body
 brain 86, 87, 89, 92, 107, 108, 168
 Brentano, F. 9, 124, 146, 154,, 158, 171–3, 187
 Broad, C. D. 185
 Bynum, Terrell W. 4, 10, 90–109
 Bywater, T. 124
- capacities 2, 3, 4, 7, 12, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 47, 52, 58, 59, 60, 65, 66, 68, 100, 101, 103, 104, 114, 143, 163, 164, 173, 179, 183, 186, 188, 189, 194, 214
 Cartesian, Cartesianism (*see also* Descartes, R.) 90, 91, 107, 144, 163, 165–71, 176, 180, 181, 183, 194, 195
 categories 1, 16, 20, 158
 cause, causation 6, 9, 19, 26, 28, 29, 34, 57, 62, 72, 76, 92,

INDEX

- 95, 96, 98, 104, 107, 130,
132, 134, 135, 137, 139, 141,
145, 161, 167, 175, 176–80,
181, 182, 183, 184, 186, 188,
189, 194, 195, 196, 204, 212
- change 19, 29, 30, 31, 32, 33,
34, 36, 48, 63, 72, 75, 76, 77,
78, 80, 81, 83, 84, 88, 91, 99,
138, 140, 166, 169, 174, 176,
193, 201, 202, 203, 205, 208,
211, 212, 213
- Charlton, W. 5, 11, 12, 188,
197–216
- Clark, S. 154
- Cleanthes 195
- colour 1, 26, 34, 35, 36, 37, 40,
41, 43, 44, 47, 48, 49, 51, 52,
53, 59, 61, 71, 72, 73, 76, 78,
79, 80, 93, 95–6, 103, 117,
138, 140, 141, 169, 172, 183,
185, 190, 191, 192, 195
- consciousness 92, 164, 166,
167, 169, 170, 189, 209, 210,
213
- Cook, J. 185
- contemplation 25, 60, 67, 110,
121, 122, 140, 202
- contraries, opposites 24, 29, 30,
32, 35, 44, 47, 54, 55, 62, 64,
68, 76, 77, 80, 81, 88, 96, 98,
155
- definition 16, 17, 23, 26, 27, 34,
54, 65, 163, 197, 202, 204,
212
- Democritus 36, 97, 111, 123,
172, 176, 189, 192
- demonstration 15, 17
- Descartes, R. (*see also*
Cartesian, Cartesianism) 75,
164, 165–71, 171, 173, 175,
180, 181, 193
- desire 7, 18, 24, 26, 63, 66, 67,
68, 69, 92, 104, 105, 107,
122, 130, 162, 164, 167,
176–80, 180, 182, 183, 184,
186, 188, 189, 190, 193, 194,
210
- dialectic 2, 3, 17, 18, 92, 185
- Diels, H. 188, 192
- Diogenes 123
- disposition 33, 35, 56, 61, 65,
121, 138, 140, 141, 166, 181,
186, 205
- divine, divinity 20, 28, 143,
150, 151, 152, 153, 154, 159
- dreams 56, 100
- dunamis* 4, 5, 167, 179, 181,
190, 197, 201, 202, 203, 204,
205, 206, 207, 209, 212, 213
- During, I. 152
- Durrant, M. 13
- Edel, A. 98, 108
- elements 29, 30, 31, 45, 46, 49,
72, 73, 76, 84, 91, 93, 94,
107, 111, 125, 126, 165, 180,
208, 212
- emotion 91, 162, 194, 196
- Empedocles 29, 35, 55, 61, 84,
111, 123, 125, 172, 176, 188,
192
- end, that for the sake of which
17, 28, 31, 66, 68, 71, 165,
166, 177, 178, 179, 180, 183,
186, 189, 193, 194, 208
- energeia* 4, 5, 140, 166, 201,
202, 203, 204, 205, 206, 207,
209, 211, 212, 213, 214, 215
- entelecheia* 4, 5, 140, 166, 201,
202, 203, 204, 205, 206, 207,
212, 213, 214, 215
- environment 92, 94, 103, 105
- error 15, 55, 57, 135
- essence (*see also* substance) 34,
86, 118, 126
- eternal, eternality 28, 35, 61,
144, 149, 150, 151, 152, 153
- explanation 4, 5, 6, 9, 11, 18,
31, 35, 37, 75, 77, 80, 81, 82,
83, 84, 85, 110, 129, 138,
146, 148, 158, 175, 178, 194,
196, 198, 204, 206, 207, 209,
210, 212, 213
- faculty 20, 24, 26, 27, 28, 29,
31, 52, 56, 59, 65ff., 70, 87,
89, 92, 94, 97, 99, 100–2,

INDEX

- 102–5, 112, 113, 115, 116,
120, 126, 131, 145, 147, 162,
166, 190, 191
- falsity 52, 55, 56, 57, 58, 61,
62, 64, 65, 118
- finitistic account (of individual
noetic activity) 8, 128ff.
- flavour 26, 34, 41, 42, 43, 44, 45,
47, 48, 52, 53, 73, 94, 96, 102,
117
- food (*see also* nutriment) 1, 30,
31, 74, 103, 104, 107
- form 4, 5, 6, 7, 12, 18, 19, 21,
25, 47, 48, 54, 58, 59, 60, 64,
65, 68, 71, 81, 83, 85, 86, 88,
89, 90, 91, 92, 93, 94, 95, 97,
98, 99, 103, 107, 108, 112,
121, 122, 123, 159, 163, 167,
168, 172, 175, 176, 190, 191,
193, 196, 199, 200, 201, 202,
204, 205, 206, 207, 212, 213
- form expressions 200, 201, 203,
206, 207, 212
- form and matter *see* matter and
form
- formal cause, description 6,
167, 175, 176, 176–80, 184,
186, 194, 195
- forms (Platonic) 59, 137, 153,
170, 208
- Fortenbaugh, W. 194
- function 3, 5, 6, 11, 16, 17, 18,
24, 25, 28, 29, 71, 91, 131,
133, 142, 164, 165, 167, 184,
187, 189, 198, 199
- functionalist, functionalistic
account 4, 9, 129, 134, 135,
154, 186, 187
- generation and reproduction 28,
29, 30, 31, 71
- Gill, M. L. and Lennox, J. 161
- God 143, 144, 149, 170
- growth 24, 29, 30, 66, 70, 71,
164, 165, 171, 180, 192
- Guthrie, W. 154
- Haldane, E. S. and Ross, G. R.
T. 190
- Hamlyn, D. W. 3, 5, 10, 11, 12,
90, 109, 115, 124, 126, 144,
154, 157, 190, 191, 197,
198, 199, 202, 210
- Hammond, W. A. 191
- Hardie, W. F. R. 193
- hearing 27, 31, 33, 34, 37ff., 41,
43, 44, 46, 49, 51, 52, 53, 63,
71, 74, 76, 93, 162, 209
- hearing, organ of 38, 39, 63, 76, 94
- Heraclitus 104, 111
- Hesse, Mary B. 195
- Hett, W. S. 88, 191
- hexeis* 156, 167, 179, 180, 190
- Hicks, R. D. xii, 85, 87, 88,
120, 143, 150, 151, 157, 159,
162, 166, 187, 191
- Hippo 123
- humans 105, 163, 170, 171,
178, 180, 189
- Hyman, A. 154, 160
- Iamblichus 195
- identity 79, 80, 84, 104, 134,
135, 148, 162, 168, 175, 176,
193, 205
- image (*see also* phantasm) 51,
87, 100, 101, 102, 121, 122, 131,
142, 145, 154, 155, 156, 157,
170, 171, 174, 176, 190, 192
- imagination 1, 7, 11, 17, 24, 26,
27, 40, 55–8, 65, 66, 68, 69,
87, 100, 102, 110, 115, 120,
121, 122, 127, 154, 189
- immortality 61, 128, 150, 151,
152–53
- individuation 1, 147, 151, 207
- instantiation 205, 207, 208, 213
- intellect (*see also* mind) 1, 8,
9, 11, 16, 19, 20, 24, 25, 26,
28, 41, 56, 58–60, 61, 62, 64,
66, 67, 68, 70, 75, 86, 87, 89,
91, 92, 99, 100, 102, 104,
105, 120, 125; contemplative
27, 67, 68; passive 58, 59, 61;
practical 67, 68; productive 8,
61
- intentionality 105–7, 134,
186, 196

INDEX

- judgement, judging 34, 47, 53, 54, 55, 56, 59, 60, 63, 65, 71, 76, 80, 81, 85, 88, 92, 98, 99, 100, 102, 103, 105, 106, 111, 114, 115–19, 120, 125, 126, 166, 189, 190
- Kahn, C. 166, 189, 195
- kinesis* 99, 166, 190, 209, 211, 212
- Kirwan, C. 200
- knowledge, knowing 10, 11, 15, 16, 20, 21, 22, 25, 32, 33, 55, 56, 58, 59, 60, 61, 63, 65, 67, 70, 84, 100, 111, 114, 124, 131, 144, 147, 148, 149, 155, 157, 185, 202, 204, 205, 206, 214
- Lawson-Tancred, H. 9, 12
- learning 59, 65, 121, 124, 132
- Lennox, J. *see* Gill, M. L. and Lennox, J.
- Liddell, Scott, Jones 156
- life, living 2, 3, 5, 7, 21, 22, 24ff., 26, 28, 29, 30, 31, 55, 70, 71, 73, 92, 165, 166, 199, 200, 201, 213
- light 35ff., 38, 39, 43, 48, 58, 61, 72, 95, 97, 120, 138, 139–43, 149, 156, 157, 159
- Lloyd, A. C. 196
- Lloyd, G. E. R. 12
- locomotion (*see also* movement) 19, 26, 27, 29, 54, 55, 66, 67, 68, 71, 72, 91
- Long, D. 185, 195
- Lowe, M. F. 4, 6, 110–27
- Lucretius 195
- McKeon, R. 88
- man 7, 8, 19, 37, 40, 41, 42, 163, 198, 200, 201, 204, 206
- materialism, materialist 6, 107, 162, 163, 168, 173–6, 180, 181
- mathematics 16, 64, 87, 116, 117, 121, 122, 123, 151, 152, 153, 201
- Matson, W. 162, 187
- matter 4, 5, 6, 7, 10, 11, 18, 21, 22, 25, 29, 32, 42, 47, 48, 51, 59, 60, 61, 63, 65, 71, 79, 81, 83, 85, 86, 88, 90, 91, 93, 107, 112, 114, 116, 117, 118, 119, 120, 121, 123, 137, 144, 150, 152, 158, 159, 167, 168, 171, 175, 176, 185, 186, 189, 200, 201, 203, 204, 205, 206, 207, 208, 209, 210, 212, 213
- matter concepts, descriptions, expressions 176, 177, 200, 201, 203, 206, 207
- matter and form distinction (discussion of) 4, 5, 6, 85, 91, 92, 93, 94, 98, 167, 168, 172, 176, 187, 191, 193, 196, 200, 201, 203, 204, 205, 206, 207, 209, 212, 213
- mean 23, 47, 48, 63, 75, 80, 81, 82, 83, 85, 88, 98, 104, 145, 173, 174, 192, 210
- medium 36, 40, 41, 42, 43, 44, 46, 49, 71, 72, 73, 74, 76, 84, 85, 92, 95, 96, 97, 99
- mental acts, events, processes, states 1, 75, 92, 163, 164, 165, 166, 168, 169, 170, 171, 173, 174, 176, 180, 181, 183, 184, 186, 189, 190, 192, 194, 196, 209
- Merlan, P. 158, 160
- mind (*see also* intellect) 2, 10, 11, 110, 111, 112, 113, 114, 115–19, 120, 126, 128ff., 133ff., 137ff., 139ff., 143ff., 154, 155, 156, 157, 158, 159, 164, 168, 169, 173, 181, 185, 193, 194, 199, 216; as activity 61, 141, 142, 143, 144, 145, 146, 147; as potentiality 58, 59, 61, 130, 137, 139; distinctive features of 58, 61, 138, 143ff.; divine 137, 150, 153; individual 61, 128, 138, 140, 142, 146, 148, 149, 150, 151, 153, 156, 159, 161; productive (*see also* productive intellect) 8, 61,

INDEX

- 128, 133, 134, 136, 137ff., 139ff., 143ff., 154, 157, 158, 159, 161; receptive (*see also* passive intellect) 58, 59, 61, 131, 133, 136, 138, 139, 142, 143, 145, 146, 148, 152, 159, 161; transcendental characteristics of 8, 61, 128, 144ff.
- mind and body 91, 113, 117, 145, 154, 162, 181, 182, 183, 185, 187, 193
- modern philosophical problems 2, 10, 11, 181ff.
- Moraux, P. 124
- motion, movement 8, 17, 19, 20, 22, 24, 28, 29, 31, 34, 35, 36, 37, 38, 39, 40, 50, 51, 52, 54, 55, 57, 58, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 76, 77, 80, 84, 88, 94, 97, 99, 111, 121, 130, 155, 162, 165, 178, 180, 181, 182, 183, 188, 189, 194, 195, 207, 212, 213
- natural bodies, things 3, 21, 22, 163, 200, 201
- natural philosopher 18
- nature 15, 28, 29, 40, 61, 65, 67, 70, 94, 103, 105, 137–9, 165, 180, 185, 216
- noetic activity 128, 129, 130, 134, 138, 143, 147, 154, 156; agent 131, 135; behaviour 129; structures 135
- noûs* 8, 86, 128–61
- Nowell-Smith, P. 193
- Nozick, R. 136, 155, 160
- Nussbaum, M. C. 91, 100, 101, 109, 160, 187
- nutriment 1, 24, 26, 28ff., 31, 70, 72, 188
- nutrition 24, 26, 27, 28ff., 30, 68, 72, 123, 164, 165, 170, 171
- Nuyens, F. 85, 89
- objects, external 31, 33, 63, 76, 84, 86, 92, 93, 106, 135, 173; material 94, 95, 199
- odour 26, 36, 41, 42, 48, 53, 73, 76, 82, 94, 96, 103, 167, 175, 176
- O'Meara, D. 160
- Onians, R. B. 189, 192
- organs *see* sense organs
- other minds 2, 10, 11, 185, 186
- Owens, J. 155, 160
- pain 24, 26, 63, 64, 70, 74, 92, 103, 104, 105, 189, 190
- particular thing 4, 16, 19, 20, 28, 29, 30, 32, 33, 47, 197, 205, 206
- passions 18, 26, 58, 66, 68, 92
- pathē* 166, 167, 179, 180, 189, 190, 194
- perceiving, perception 1, 3, 4, 6, 9, 10, 16, 19, 22, 24, 25, 26, 27, 28, 29, 31–4, 36, 37–47
- passim*, 48, 49–54, 55ff., 59, 63, 64, 65, 66, 68, 69, 71, 72, 73, 75–89, 90–109, 130, 134, 135, 139, 151, 155, 162, 163, 164, 165, 166, 169, 170, 171, 172, 174, 175, 176, 183, 185, 186, 187, 189, 192, 205, 207, 208, 209, 210, 211, 212, 213, 214
- perception, common objects of 34, 50, 51, 58, 93, 94; faculty of 27, 31, 52, 56, 59, 67; incidental 50, 57; incidental, objects of 34, 50, 57, 73, 109; objects of 16, 19, 26, 28, 31, 33, 34–47 *passim*, 48, 49ff., 52ff., 56ff., 63, 64, 65, 72, 73, 76, 77, 78, 79, 83, 84, 92, 93–5, 96, 97, 98, 101, 106, 107, 108, 130, 134, 135, 139, 171, 172, 173; special objects of 34, 50, 51, 55, 57, 93, 94; subjects of 16, 33, 52, 53, 54, 58, 63, 65, 92, 130, 134; theory of 9, 10, 81, 84, 90–109
- perception and: imagination 1, 24, 27, 55ff.; intellect 54, 55, 56, 58, 59, 60; judgement 1,

INDEX

- 53, 54, 58, 59, 60, 99, 100ff.,
102ff.; thought 1, 55, 56, 57,
58, 59, 60, 134, 139, 167, 170
- perception that we perceive
51ff., 79, 169, 191
- phantasia* 58, 100–2, 103, 104,
106, 107, 196
- phantasm 56, 63, 64, 65, 70,
100, 102, 174, 190, 192
- Philoponus ('Greek') 124
- Philoponus ('Latin') 124, 126
- philosophy, first 18; of mind 2, 3,
4, 129, 186; of perception 10,
90; of psychology 2, 3, 4, 9
- physical structures 131, 145,
147, 152, 184, 207, 212, 213
- physics 90, 93, 107
- physiological processes, states
75, 85, 167, 168, 171, 172,
174, 175, 176, 179, 180, 181,
182, 185, 186, 187, 189, 190,
191, 193, 196, 209, 211
- physiology 3, 90, 91, 100, 105,
107, 174, 196
- plants 22, 23, 24, 26, 27, 28,
29, 48, 66, 67, 73, 81, 82, 83,
91, 92, 103, 163, 164, 170,
173, 174, 180, 188, 192, 198
- Plato 85, 111, 153, 165, 170,
188, 198, 208
- Plato, works of: *Charmides* 191;
Cratylus 208; *Hippias*
Major 208; *Laws* 189;
Philebus 190; *Republic* 170,
208; *Theaetetus* 188;
Timaeus 188, 189, 192
- Platonists 85, 135
- pleasure 24, 26, 63, 64, 67, 69,
70, 74, 92, 103, 104, 105,
189, 190, 192, 211
- Plutarch 124
- possibility 5, 12, 205, 206, 207,
208, 209, 211, 212, 213
- potential, potentially 23, 24, 25,
27, 28, 31, 32, 33, 35, 44, 46,
47, 52, 58, 59, 60, 61, 62, 63,
65, 76, 77, 78, 84, 91, 95,
97, 98, 112, 113, 114, 119,
123, 132, 137, 138, 139, 140,
144, 148, 149, 155, 173, 199,
203, 204, 206
- potentiality 4, 5, 16, 21, 25, 26,
31, 32, 33, 44, 52, 91, 130,
131, 132, 134, 164, 197, 202,
204, 205, 206
- power 4, 5, 33, 71, 80, 81, 82,
83, 88, 89, 93, 95, 96, 202,
205
- Price, H. H. 185
- prime mover 134, 137, 156
- principle 2, 3, 16, 20, 22, 24,
25, 28, 29, 30, 48, 54, 94,
111, 182
- privation 35, 62, 91, 140
- proportion 29, 94, 95, 96, 114,
124, 125
- psychological: activities, events
1, 75, 212, 213; notions,
terms 198, 201
- psychology 107, 108, 176, 188,
212
- pursuit 63, 64, 67, 104, 105,
121, 122, 210
- Pythagoreans 19
- qualitative change *see*
alteration
- ratio 47, 53, 59, 88, 201, 213
- reason 1, 23, 27, 55, 56, 66, 67,
68, 69, 70, 71, 105
- reflexive self reference 136
- reproduction *see* generation
- Rist, J. 156, 160
- Robinson, H. *see* Blumenthal,
H. J. and Robinson, H.
- Rodier, G. 75, 87, 124, 154,
157, 158
- Rorty, A. O. 187, 196
- Rorty, R. 168, 190, 193
- Ross, G. R. T. 162, 166, 188,
191
- Ross, W. D. 75, 79, 87, 89,
123, 124, 154, 156, 158,
159, 160, 162, 163, 166, 183,
188
- Ryle, G. 9, 180–1

INDEX

- Sachs, D. 87
 scepticism 10, 11, 185, 186
 Schofield, M. 160, 188
 science 10, 16, 107, 108
 Searle, J. 106, 109
 sensation 38, 44, 45, 88, 92, 95, 108, 110ff., 116, 117, 119, 120, 121, 122, 123, 124, 126, 163, 164, 189
 sensation and: imagination 120, 121, 122; mind 116, 119, 120, 121, 126; thinking 110ff., 121, 122, 123, 124, 125, 126
 senses: 7, 10, 24, 25, 26, 27, 34ff. *passim*, 40, 41, 45, 46, 47, 48, 49, 50, 51ff., 55, 57, 65, 71, 72, 73, 76, 79, 80, 81, 82, 84, 85, 86, 88, 93, 94, 97, 98, 99, 112, 113, 117, 126, 172, 173, 192, 209; common 64, 98–100, 187, 191; destruction of 43, 47, 53, 73, 88, 98; number of 49, 50; objects of 10, 79, 81, 93, 98, 99, 113, 172, 192; special 34, 50, 51, 55, 57, 93, 94
 sense organ 19, 20, 22, 29, 31, 36, 38, 40, 41, 42, 43, 44, 45, 46, 47, 49, 50, 51, 53, 59, 63, 72, 73, 75ff., 91, 93, 94, 95, 96, 97–8, 99, 101, 103, 105, 106, 113, 131, 162, 166, 173, 174, 189, 190, 191, 192, 193, 197, 200, 209, 213
 sense perception *see* perception
 sensible qualities 47, 77, 80, 81, 84, 86, 88, 93, 94, 95, 96, 103, 117, 125
 sensing 111, 121, 124, 125, 172
sensus communis 92, 97, 98–100, 103, 104
 separation 8, 17, 18, 23, 24, 25, 58, 59, 60, 61, 62, 64, 65, 66, 68, 114, 126, 144, 145, 146, 147, 150, 151, 153, 154, 157, 158, 159, 170, 208
 Sextus Empiricus 188
 sight, seeing 1, 22, 27, 31, 34–7, 41, 43, 44, 46, 48, 49, 50, 51, 52, 53, 56, 58, 63, 71, 73, 78, 79, 82, 93, 99, 118, 162, 164, 169, 170, 172, 174, 183, 185, 186, 190, 191, 195, 209, 210, 211
 sight, organ of 22, 23, 36, 46, 49, 50, 51, 72, 78, 79, 164, 169, 172, 174, 183, 184, 185
 Simplicius 124, 126, 195
 Slakey, Thomas J. 6, 75–89, 162, 173, 174, 175, 187, 192
 smell 1, 27, 36, 37, 40–2, 46, 48, 49, 53, 59, 71, 73, 82, 94, 97, 99, 166, 167, 175, 176, 181, 195, 209; organ of 41, 42, 76
 Smith, J. A. 88, 115, 191
 Solmsen, F. 162, 165, 187, 188, 189, 195
 Sorabji, R. 6, 9, 11, 154, 158, 160, 162–96, 214
 soul 1ff., 15ff., 21ff., 23ff., 26–7, 28ff., 30, 33, 54, 61, 65, 75, 84, 85, 86, 89, 91, 102, 111, 112, 125, 130, 137, 152, 162, 163, 164–5, 166ff., 176, 179, 181ff., 185, 188, 189, 190, 192, 193, 194, 195, 197–216; biological conception of 164–5, 182, 188, 214; parts of 16, 23, 24, 25, 48, 58, 59, 66, 68, 91, 112, 113, 114, 116, 120, 121, 126, 164, 199
 soul and body 1ff., 17, 18, 19, 20, 21, 22, 23, 24, 25, 30, 31, 59, 69, 71, 75, 85, 86, 91, 162–96, 204, 213, 214
 soul expressions 199
 sound 1, 26, 34, 35, 36, 37–40, 43, 44, 47, 48, 49, 52, 53, 71, 73, 94, 96, 97, 99, 102, 103, 117
 Strawson, P. F. 171, 180, 185, 191
 subject 7, 8, 21, 25, 44, 53
 substance 1, 7, 9, 15, 16, 17, 20, 21, 22, 28, 30, 61, 85, 91, 108, 117, 125, 158, 197, 199, 200, 203, 211

INDEX

- supposal, supposition 7, 55, 56, 57, 59, 70
 taste 1, 34, 36, 40, 41, 42–4, 45, 46, 49, 52, 53, 71, 74, 94, 97, 99
 taste, organ of 43, 76
 Taylor, C. 194
 teleology 185, 194
 Theiler, W. 125
 Themistius 124
 Theophrastus 174, 192
 thinking, thought 1, 3, 4, 6, 7, 8, 16, 17, 19, 20, 24, 25, 26, 27, 33, 53, 54, 55, 56, 58ff., 61, 62, 63, 64, 65, 67, 68, 69, 71, 86, 91, 102, 103, 110–27, 129ff., 133, 134, 138, 139, 140, 141, 142, 143, 146, 148, 149, 152, 154, 155, 156, 157, 158, 159, 161, 163, 167, 169, 170, 171, 210, 213
 thinking: apprehensive 110, 116, 117, 119, 122, 124, 125;
 autonomous 110, 116, 117, 119, 122, 124, 125; infallible 62, 63, 117, 118, 126, 136;
 objects of 55, 58, 59, 60, 61, 62, 63, 64, 65, 67, 86, 102, 113, 114, 115, 116, 117, 118, 119, 121, 122, 123, 125, 126, 130, 132, 133, 134, 135, 136, 138, 139, 148, 155, 156, 158, 161, 170, 171
 touch 24, 25, 26, 27, 34, 36, 41, 42, 43, 44–7, 49, 53, 71, 72, 73, 76, 77, 78, 94, 96, 98, 102, 103, 104, 173, 185, 192;
 organ of 44, 45, 46, 76, 77, 78, 79, 103, 173
 Tracy, T. 94, 95, 98, 109, 190
 transcendent, transcendental 8, 128, 129, 144, 145, 149, 151, 152, 153
 transparent, the 35, 36, 37, 74, 76, 95, 96, 139, 140, 141, 157
 truth 15, 52, 55, 56, 57, 58, 61, 62, 62, 63, 64, 65, 112, 118

 understanding 55, 56, 58, 65, 111, 112, 116
 universals 5, 16, 33, 161, 205, 206, 207
 unmoved mover 137, 150, 154, 159

 Vendler, Z. 211
 vision (*see also* sight) 95, 97, 141
 voice, 3, 39, 40, 44, 52
 void 38, 97
 von Wright, G. H. 194

 wanting, wants 1, 7, 24, 26, 66, 67, 68, 69, 74, 177
 Wedin, M. V. 4, 8, 128–61
 what a thing is 4, 15, 16, 21, 27, 31
 what it is to be F 4, 5, 6, 22, 47, 51, 52, 54, 59, 60, 66, 114, 116, 117, 118, 119
 what it is to be what it was (of something) 22, 60, 63, 118
 White, A. R. 194
 Wiggins, D. 175, 188, 193
 Wilkes, K. 9, 12, 154
 wishing 26, 66, 68, 70, 161

 Xenophon 208

 Zarabella, J. 150, 153, 159
 Zeller, E. 115, 120, 124, 205